

REPORT

FOR

***Storm and Sanitary Sewer Study  
Volume 1 – Executive Summary &  
Report Volumes Bridging Document***

FOR

City of Midland



September 2018

Prepared by:



**HUBBELL, ROTH & CLARK, INC.**  
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## Introduction

As a result of the heavy rains and flooding that occurred in late June 2017, the City of Midland commissioned this Storm and Sanitary Sewer Study by the Joint Venture team of Orchard, Hiltz & McCliment (OHM) and Hubbell, Roth & Clark (HRC).

This weather event impacted over one thousand residents and businesses by way of basement flooding and surface flooding. Although much of the flooding was a direct impact of the Tittabawassee River flood levels, many areas of the City's storm and sanitary sewer systems were overwhelmed with high flows and were therefore unable to provide an adequate Level of Service.

IT IS CRITICAL FOR ANY COMMUNITY TO  
INVEST IN LOCAL INFRASTRUCTURE TO  
MAINTAIN A REASONABLE LEVEL OF  
SERVICE FOR RESIDENTS AND BUSINESSES.

The City operates separate storm and sanitary sewer systems. Although they are intended to be separate systems, they can be connected via unknown connections above and below the surface. These connections can include:

- Surface flooding entering sanitary sewer manholes.
- Floodplain waters entering sanitary pump stations, sewer manholes, and other sanitary sewer structures along the Tittabawassee River, Sturgeon Creek, or any other open channel water feature.
- Existing cross-connections between sanitary sewers and storm sewers that were missed during separation projects in the past, or failed bulkheads between the two utilities.
- Groundwater infiltration through breached sanitary sewer pipes and manholes, primarily through joints and cracks.

*Level of Service* is defined as the ability for a sewer system to adequately manage wet weather flows without causing harm to private property and the public well-being.

- For sanitary sewer systems, the Level of Service is regulated by the Michigan Department of Environmental Quality and is set at a 25-year storm (4% chance of being exceeded in any given year, or about 4.2 inches of rain in a 24-hour period). This means that the sewer system should not experience any overflows up to and including a 25-year storm.
- For storm sewer systems, there is no regulated Level of Service. However, current City policy is to provide a 10-year Level of Service (10% chance of being exceeded in any given year, or about 3.4 inches of rain in a 24-hour period). For a storm sewer system, this means that no excessive surface flooding greater than approximately 5 inches shall result from a 10-year event.

The June 2017 rainfall was an 82-year recurrence interval event (1.2% chance of being exceeded in any given year); 7.46 inches of rainfall was observed in Midland during a seven-day period. This caused the Tittabawassee River to reach the second highest water level in its recorded history, exceeded only once before in 1986. Although the maximum 24-hour rainfall during this period was smaller than the “design” 24-hour event, the long period of steady rainfall created a “wet” antecedent moisture condition that caused the system to react more than it would during typical conditions.

Although the June 2017 rainfall exceeds the Level of Service goals for both the storm and sanitary sewer systems, it provides a useful benchmark against which the systems can be evaluated and validated. Portions of the City’s storm and sanitary sewers do not currently provide the Level of Service goals listed above. In most cases, this is due to the fact that much of the City’s infrastructure was built when standards were different. Additionally, aging infrastructure may not perform as well due to structural deficiencies and blockages. The recommendations in this study are intended to allow the City to achieve these Level of Service goals.

It is critical for any community to invest in local infrastructure to maintain a reasonable Level of Service for residents and businesses. It is a cornerstone of a healthy local economy and provides the necessary foundation for current and future generations to live and thrive. As communities continue to age, it is imperative that additional investments are made in order maintain a functioning sewer system.

PUBLIC COMMENT INCLUDED AN EMPHASIS ON FLOODING ALONG THE STURGEON CREEK, LIKELY CAUSED BY EXCESSIVE DEBRIS. THIS SHOULD NECESSITATE CLOSER STUDY IN PHASE 2.

### **Study Methodology**

This Study included a system-wide analysis of storm sewers, ditches, channels, detention ponds, bridges, culverts, sanitary sewers, and pump stations. This analysis was completed with the help of complaint data collected after the June 2017 flooding event; this information, in addition to aerial videos provided by the Michigan State Police, allowed the project team to focus its efforts on known problem areas. Hydrologic and hydraulic models were developed for both the storm and sanitary sewer systems; these models were calibrated based on observed data and were tested against “design” storms, such as the 10-year (storm sewer) and 25-year (sanitary sewer), as described on the previous page. The models provided direct feedback on where problems exist and where investment is needed to improve the Level of Service.

## **Public Outreach / Public Comment**

City staff, along with OHM and HRC representatives, presented the Study to the public during two forums; the first held on July 25 and the second held on July 31, 2018. These events allowed the City to have a productive and engaging dialogue with interested residents. Over 100 people (between the two events) learned about the Study and provided useful feedback. Additionally, residents were able to post specific questions and comments about the Study, which were received by City staff, with timely responses made for each request. The comments received from City residents and property owners helped to confirm where future efforts should be directed (refer to Appendix A for all posted public questions and City-supplied answers).

Key concerns among residents included:

1. Sturgeon Creek Flooding – debris blockages, reported by residents, resulted in excessive flooding along the Sturgeon Creek; primarily upstream (north) of Saginaw Road. The Study noted the discrepancy between the FEMA “official” Floodplain and observed water levels. This should necessitate closer evaluation in a Phase 2 study.
2. Footing Drain Disconnections – residents expressed concern over the impacts of footing drain disconnections on individual homes, the potential cost of a disconnection program, and how it might impact flows to the storm sewer system.

## **Key Recommendations – Phase 1 Capital Improvement Plan**

This Storm and Sanitary Sewer Study recommends a combined Capital Improvement Program of \$118 million. This includes:

- \$30 million, Priority 1 Storm Sewer Improvements.
- \$50 million, Priority 2 Storm Sewer Improvements.
- Up to \$38 million, Sanitary Sewer Improvements.

THE \$118 MILLION CAPITAL IMPROVEMENT PROGRAM FOCUSES ON SEWER SYSTEM ENLARGEMENT, PUMP STATION UPGRADES, WET WEATHER STORAGE FACILITIES, AND THE REDUCTION OF INFLOW/INFILTRATION.

These recommended projects focus on the following types of improvements generally sized to each sewer system’s respective design event:

- Storm Sewer
  - Sewer system enlargement (including sewer pipes and roadway culverts) to convey peak flows without excessive flooding.
  - Detention ponds to store wet weather flows, thereby limiting peak flow impacts to downstream system components.

- Sanitary Sewer

- Footing Drain Disconnection to remove inflow/infiltration sources from the sewer system.
- Sewer system enlargement to convey peak flows without sanitary sewer overflows.
- Pump station upgrades to increase flow capacity and operational reliability.
- Wet weather storage tanks to control peak flows.
- Inflow/infiltration source removal to reduce wet weather peak flows.

AS SEWER SYSTEMS AGE, REGULAR INSPECTION AND MAINTENANCE IS EVEN MORE CRITICAL. A DEDICATED FUNDING SOURCE IS NEEDED TO ALLOW ADEQUATE INVESTMENT IN THE STORM SEWER SYSTEM.

It is important to note that sanitary sewer alternatives that increase the system conveyance could result in added peak flows at the wastewater treatment plant (WWTP), thereby potentially requiring major capital costs and an increase to the plant's yearly operation and maintenance costs (O&M). Evaluating WWTP capacity was outside the scope of this study; therefore, the cost-effectiveness and feasibility of increasing system conveyance will need to include an evaluation of WWTP capacity (both short-term capital costs and long-term O&M costs).

Refer to Figure 1 for a map showing the recommended storm and sanitary improvement locations. Refer to Volumes 2 and 3 for lists of specific recommended projects for the storm and sanitary systems, respectively.

The above recommendations represent a 'first cut' of a long-term Capital Improvement Plan. Although these costs are realistic in magnitude and provide a good planning tool for future spending needs, it will be critical for the City to refine the Capital Improvement Plan through careful study and verification of project locations, sizes, and configurations. This will be accomplished in Phase 2 of the Storm and Sanitary Sewer Study.

Phase 2 recommendations are detailed below.

### **Key Recommendations – Phase 2 Activities**

The following activities are recommended for implementation by City staff. These activities are primarily based on the recommendations in Phase 1 of the Study, although feedback during the Public Outreach helped to inform this list. Table 1 (following page) lists these projects; this list answers the question "*What should the City start doing today?*".

**Table 1 – Early Action Items (Phase 2)**

Phase 2 Activities - Stormwater		Phase 2 Activities - Wastewater	
Stormwater Activities Depend on a Dedicated Funding Source (no adequate funding source currently available)	Sturgeon Creek Flooding: <ul style="list-style-type: none"><li>Initiate discussions with Midland County Drain Commissioner on options to address Sturgeon Creek Debris Removal.</li><li>Survey bridges and culverts along the Sturgeon Creek to verify hydraulic opening area and identify existing hydraulic capacities.</li></ul>	Sewer System Monitoring <ul style="list-style-type: none"><li>Establish a system of rain gages and sewer flow meters to more accurately track the sources of infiltration and inflow.</li><li>Update the system model as new data are gathered. The model can be used to refine the recommended capital projects.</li></ul>	
	Snake Creek Culverts <ul style="list-style-type: none"><li>Begin preliminary engineering on the four Snake Creek culverts identified for proper sizing and possible replacement.</li></ul>	Sewer System Maintenance and Inspection: Continue to regularly clean sanitary sewers to remove sediment, roots, and other obstructions. As well, develop a routine city-wide televising program.	
	Jacobs Drain <ul style="list-style-type: none"><li>Inspect the Jacobs Drain enclosure (County Fairgrounds) to confirm whether a blockage exists (may require coordination with the Drain Commissioner).</li></ul>	Establish a Footing Drain Disconnection Pilot Program <ul style="list-style-type: none"><li>Focus on a single subdivision (e.g. Whitewood Sub) and perform pre- and post-program flow analysis. Include an active public outreach program to maximize participation.</li></ul>	
	Storm Sewer Inspections <ul style="list-style-type: none"><li>Initiate a storm sewer televising/inspection program as recommended in the Phase 1 Study.</li><li>Continue to regularly clean storm sewers; focus on blockages identified during the televising efforts.</li></ul>	Infiltration/Inflow Field Investigations <ul style="list-style-type: none"><li>Focus on sewers, manholes and pump stations located along the river or in the floodplain areas and in the areas experiencing the highest frequency of basement flooding.</li><li>May consist of smoke testing, dye testing, targeted sewer televising, and pump station performance testing.</li></ul>	
	Revenue Source <ul style="list-style-type: none"><li>Review options for establishing a dedicated revenue source for the recommended Capital Improvement Program. This can be accomplished through a user fee or tax.</li></ul>	Funding <ul style="list-style-type: none"><li>Evaluate the City’s current sewer rates regarding implementation of the Phase 2 investigation and the recommended Capital Improvement Program.</li></ul>	
Phase 2 Activities – Stormwater <u>and</u> Wastewater			
Track sewer inspection data (structural condition, maintenance issues, etc.) in the City’s GIS database. Develop a framework for data capture and storage. This database will allow the City to enhance its ongoing Asset Management Program for both the storm and sanitary sewer systems.			
Continue to engage and dialogue with the public on status of existing projects and proposed projects with similar public outreach engagement activities that were utilized as part of this study, such as: YouTube videos, E-City Hall Survey, and Public Outreach meetings.			

Phase 2 activities go beyond capital improvements; they also include high-priority inspection, maintenance, and flow metering efforts that are critical for the City to further enhance its understanding of the storm and sanitary sewer systems. As sewer systems age, regular inspection and maintenance is even more critical. These efforts are important to reduce the likelihood of future system failure (i.e. basement backups and flooding).

The recommended activities include critical steps towards achieving sustainable storm and sanitary sewer utilities; this includes:

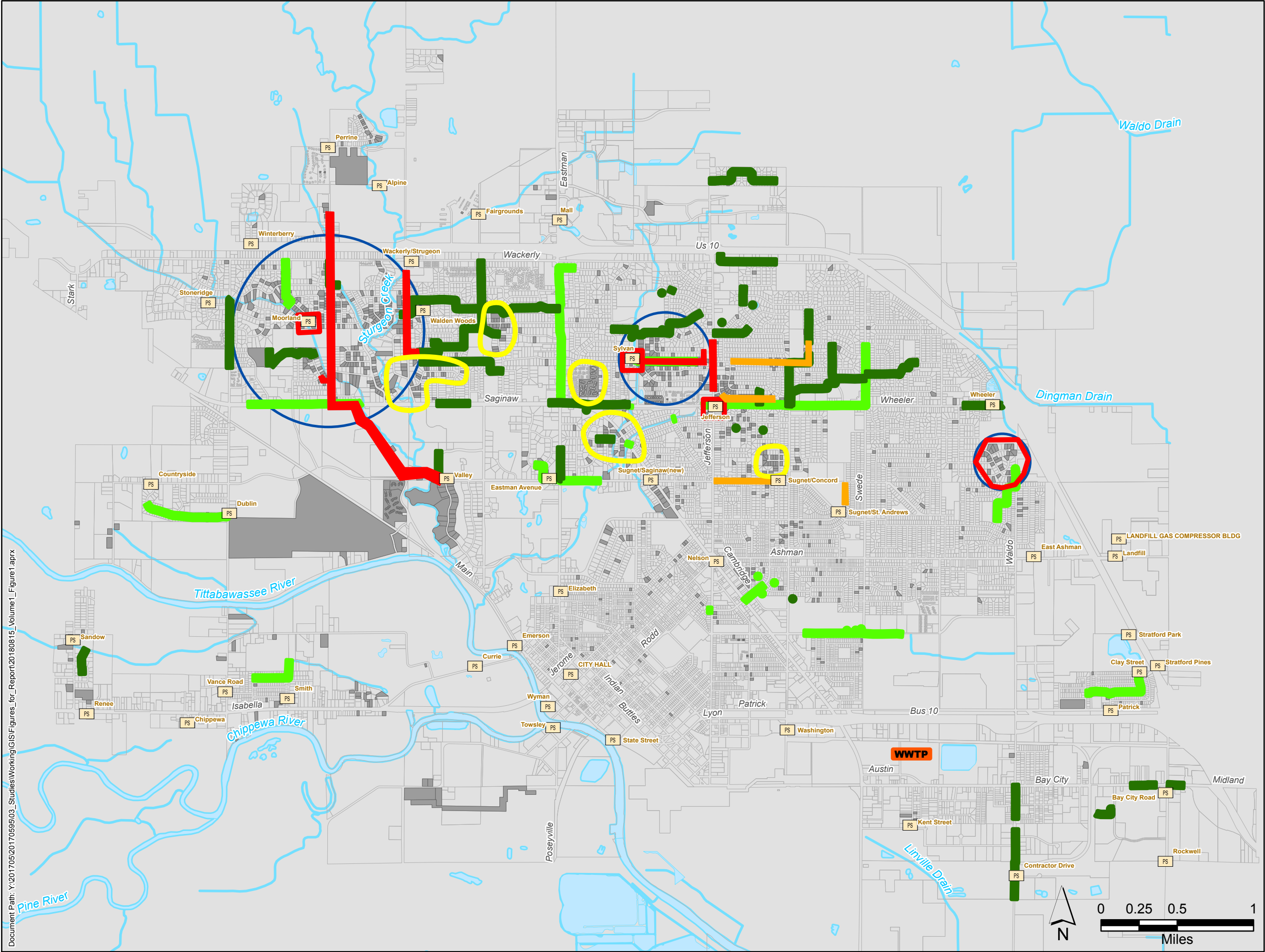
- Adequate funding levels
- Sanitary sewer flow metering program
- Systematic inspection program (more critical for the storm sewer system, which does not currently have a budget for such a program)
- Continue to build upon the City's existing Asset Management Program

The sanitary sewer system currently has a dedicated revenue source; the storm sewer system does not. In order for the City to address the storm sewer recommendations, it will be necessary establish a revenue source for storm sewer projects; this is typically accomplished using taxes or user fees.

In summary, the City of Midland is to be commended for taking steps towards addressing the areas of concern throughout the sanitary and storm sewer systems. City-wide improvements of this scale and magnitude must be addressed using a measured, comprehensive approach with proper planning for short-term and long-term studies, investigations and improvement projects. This process will take time as evidenced from the decade-long study, investigation and improvement period that followed the significant City-wide-flooding event that occurred in 1996. During that time period, large scale improvements were recommended throughout the City and were subsequently reduced through the public voting process due to the significant project costs. It will be important throughout the next several years of studying, investigating and improving of the sewer systems to continue to educate and engage the public on all aspects of this solution process.

Lastly, it is important to note that improvements reduce the impact of surface flooding and the frequency of basement flooding; however, it is generally impossible to completely eliminate these impacts from occurring and there will always be the possibility of a larger event that can exceed the selected design. Nonetheless, the City has taken a major step towards reducing the impact of significant rain and flooding events through the commissioning of this study. A detailed description of the analysis and recommended improvements to address flooding is provided in Volumes 2 and 3 for the storm and sanitary sewer systems, respectively.





Document Path: Y:\20170520\17059503\_Studies\Working\GIS\Figures\_for\_Report\20180815\_Volume1\_Figure1.aprx

CITY OF

Midland

OHM

HRC

HUBBELL, ROTH & CLARK, INC

CONSULTING ENGINEERS SINCE 1915

Legend

Priority 1 Sanitary Sewer CIP

Priority 2 Sanitary Sewer CIP

Phase 2 Future Sanitary Sewer Study/Investigation Area

Sanitary Sewer Pump Station

WWTP Treatment Plant

Flood Sanitary Problem

Flooded Parcels (Moderate to Severe)

Tax Parcels

Waterbody

Waterline

Priority 1 Storm Sewer CIP

Priority 2 Storm Sewer CIP

NOTES:

SHEET TITLE: RECOMMENDED STORM AND SANITARY SEWER IMPROVEMENT LOCATIONS	
PROJECT TITLE: CITY OF MIDLAND STORM AND SANITARY SEWER STUDY	
HRC JOB NO. 20170595	FIGURE NO. Figure 1
DATE: 8/16/2018	AUTHOR: BJM



## **APPENDIX A**

## Public Outreach Summary



## Sewer Study Public Outreach

Prepared August 13, 2018

### Public Meetings

- July 25, 2018 – Midland High School, 6:00-7:30 p.m.
  - 26 attendees
- July 31, 2018 – H.H. Dow High School, 6:00-7:30 p.m.
  - 71 attendees
- Both meetings currently in rotation on MGTV-188, replaying several times per day
- A map of all public meeting attendees and online form submissions can be found at <http://bit.ly/sewerstudymap>
- Additional media coverage of July 25 meeting provided by:
  - [Midland Daily News](#)
  - [NBC25/FOX66](#)
  - [ABC12](#)
  - [WNEM TV5](#)

### Online

- Visits to Sewer Study Survey on E-CityHall (<http://bit.ly/sewersurvey2018>): 145
  - Topic metrics:
    - 82 attendees (unique visitors)
    - 37 responses
    - Hours of public comments: 1.9 hours
  - Responses submitted in document “*E-CityHall – Sewer Study Survey 8.7.18*”

CREATED JUL 6, 3:33 PM | cityofmidland

## E-CityHall - 2017 Storm & Sanitary Sewer Study Feedback - Issue


<https://www.opentownhall.com/6488>

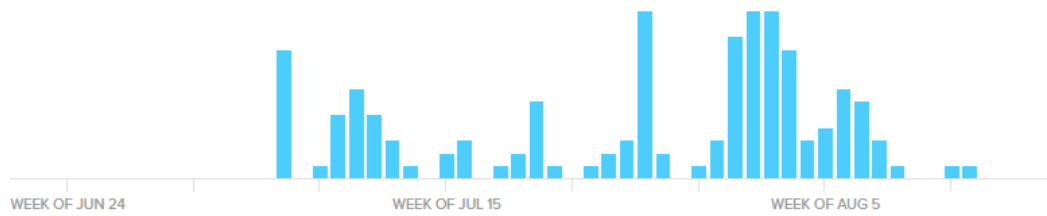
[bit.ly/sewersurvey2018](https://bit.ly/sewersurvey2018)

COPY

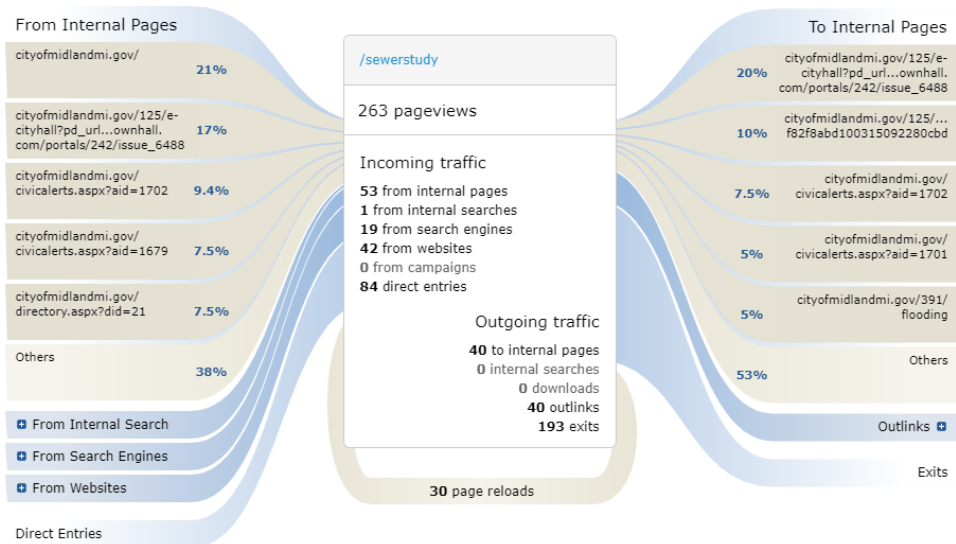
SHARE

EDIT

145   
TOTAL CLICKS



- Visits to Sewer Study info page on City website ([www.cityofmidlandmi.gov/sewerstudy](http://www.cityofmidlandmi.gov/sewerstudy)): 263



- **YouTube**

- July 25 meeting – 49 views (<https://youtu.be/QV7lX6FCLqE>)
- July 31 meeting – 11 views (<https://youtu.be/7tkvX0nVxBA>)

- July 25 event – 7 going, 20 interested
- July 31 event – 7 going, 15 interested
- Relevant posts and sample metrics below.

**City of Midland, Michigan - Municipal Government**

Published by Katie Guyer · 71 · July 22 at 2:40 PM ·

SEWER STUDY UPDATE: With the Midland Storm & Sanitary Sewer Study now complete, it's time to talk about the results and proposed solutions provided by our consultants. Watch this 'Midland Minute' to find out about our upcoming sessions with OHM Advisors (Orchard, Hiltz & McCliment, Inc.) and Hubbell, Roth & Clark, Inc.!

For Facebook updates:  
Midland Sewer Study Info Session - July 25  
Midland Sewer Study Info Session - July 31

Video

**Post**

Shares

See metrics for all videos

Performance for Your Post

1,811 People Reached

727 Video Views

12 Likes, Comments & Shares

7 Likes	4 On Post	3 On Shares
0 Comments	0 On Post	0 On Shares
5 Shares	5 On Post	0 On Shares

56 Post Clicks

8 Clicks to Play	0 Link Clicks	48 Other Clicks
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NEGATIVE FEEDBACK

2 Hide Post
1 Hide All Posts

0 Report as Spam
0 Unlike Page

Reported stats may be delayed from what appears on posts

## Post Details



### City of Midland, Michigan - Municipal Government

Published by Katie Guyer [?] · July 12 · 🌐

Join us at one (or both!) of the upcoming public info sessions to learn more about the results of the Midland Storm & Sanitary Sewer Survey. Each night will include a presentation of the results and proposed solutions from consultants [Hubbell, Roth & Clark, Inc.](#) & [OHM Advisors \(Orchard, Hiltz & McCliment, Inc.\)](#) as well as a Q&A period for residents to ask questions.

Sign up for event notifications here:

[Midland Sewer Study Info Session - July 25](#)

[Midland Sewer Study Info Sessi...](#) See More

PUBLIC INFORMATION SESSIONS

# MIDLAND SEWER STUDY

**Wednesday, July 25 | 6 - 7:30 p.m.**

Midland High School cafeteria - 1301 Eastlawn Drive

**Tuesday, July 31 | 6 - 7:30 p.m.**

Dow High School cafeteria - 3901 N. Saginaw Road

Can't make it? Read the study, share feedback & more:  
[www.cityofmidlandmi.gov/sewerstudy](http://www.cityofmidlandmi.gov/sewerstudy)

### Performance for Your Post

**1,169** People Reached

**42** Likes, Comments & Shares ⓘ

<b>4</b> Likes	<b>2</b> On Post	<b>2</b> On Shares
<b>33</b> Comments	<b>5</b> On Post	<b>28</b> On Shares
<b>5</b> Shares	<b>5</b> On Post	<b>0</b> On Shares

**140** Post Clicks

<b>8</b> Photo Views	<b>0</b> Link Clicks	<b>132</b> Other Clicks ⓘ
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#### NEGATIVE FEEDBACK

<b>0</b> Hide Post	<b>1</b> Hide All Posts
<b>0</b> Report as Spam	<b>0</b> Unlike Page

Reported stats may be delayed from what appears on posts



### City of Midland, Michigan - Municipal Government

Published by Katie Guyer [?] · July 30 at 1:29 PM · 🌐

REMINDER: Our second and final Midland Sewer Study Info Session - July 31 is tomorrow night at 6 p.m. at Herbert Henry Dow High School, so please join us!

Can't make it? Click the link below to watch the first session from last week, or visit <http://bit.ly/sewersurvey2018> to share comments or questions by August 7! (We recommend reading the study first.)



YOUTUBE.COM

#### City of Midland Sewer Study Public Input Session | Session 1

This was the first public input session where representatives from the City of Midland, Hubbell...



Get More Likes, Comments and Shares

Boost this post for \$30 to reach up to 12,000 people.



**1,299** people reached

**Boost Post**



**Grant Helms and Ted Oberhellman**

**1** Comment **5** Shares



Like



Comment



Share



Buffer



### Performance for Your Post

**1,299** People Reached

**10** Likes, Comments & Shares ⓘ

<b>3</b> Likes	<b>2</b> On Post	<b>1</b> On Shares
<b>1</b> Comments	<b>1</b> On Post	<b>0</b> On Shares
<b>6</b> Shares	<b>5</b> On Post	<b>1</b> On Shares

**28** Post Clicks

<b>0</b> Photo Views	<b>8</b> Link Clicks	<b>20</b> Other Clicks ⓘ
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#### NEGATIVE FEEDBACK

<b>0</b> Hide Post	<b>0</b> Hide All Posts
<b>0</b> Report as Spam	<b>0</b> Unlike Page

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## All Q&A Summary

(from E-City Hall Survey and Public Outreach Meetings)



## Sewer Study Public Comments

Date	Resident	Address	Storm/Sanitary/Both	General Comment/Question	Response Requested	Response Date	Response By	Response Summary
7/10/2018	Larson	646 Patterson Rd	Both	Implement a FDD program and suggestions regarding funding. Supports Storm improvements and offline detention storage	Yes	7/12/2018	J Sova	City will review insights/suggestions
7/13/2018	Anonymous	Not provided	Both	Against FDD. FDD program would make storm sewer condition worse due to more flow.	No	N/A	N/A	N/A
7/13/2018	McFarland	4713 Oakridge Dr	Both	Requests implementation of a City-wide warning system to inform residents of potential sewer overflows/flooding.	No	N/A	N/A	N/A
7/13/2018	Tardiff	4102 Elm Ct	Both	Had sewer back-up due to connected footing drain. Wants to know if City will pay to fix issues.	Yes	??		
7/16/2018	Bader	5007 Nurmi Dr	Storm	Sturgeon Creek needs to be addressed and localized conditions caused significant flood damage. Culvert and cleaning of creek channel were suggested improvements.	Yes	7/19/2018	J Sova	Past FEMA study for Sturgeon Creek is not accurate. It was also outside the scope of the study. City will consider public input and look into impacts created by the Sturgeon Creek as part of the future study.
7/20/2018	Lemoine	5111 Nurmi Dr	Storm	Comments echo Bader. Suggests increased culvert size under Saginaw Rd. & is opposed to current plans absent a further analysis of Sturgeon Creek	Yes	7/26/2018	J Sova	Past FEMA study for Sturgeon Creek is not accurate. It was also outside the scope of the study. City will consider public input and look into impacts created by the Sturgeon Creek as part of the future study.
7/25/2018	Anonymous	Saginaw Rd (near Jimmy John's)	Storm	Storm sewers aren't adequate. It fills our parking lot because it comes in from one certain spot on the road. Some has gone into the building. It will take a lot of time and money for new storm sewers on Saginaw Rd. We have ripped up carpet, put 6 inch base, tiled the floor and waterproofed it. Stocking sandbags for flooding.	IN PERSON	IN PERSON	IN PERSON	Dealing with level of service problem. Design standards have changed, so areas that were developed 20-30 years ago, storm sewers aren't sized for 10 year event. Might be sized for much smaller event. Storm sewer systems are very large and very expensive to replace, but we recommend specific areas where storm sewer capacity needs to be increased.
7/25/2018	Blasy	5112 Stony Creek Dr	Both	Sewer system isn't going to help me because I live in the floodplain. Flooded 3 times in last 5 years. Does Stony Creek come up in the study? Will Stony Creek be cleaned up from debris any time soon?	IN PERSON	IN PERSON	IN PERSON	The capital improvement plan for stormwater does provide for abatements that extends to creeks/channels, as well as culverts and bridges, in addition to the pipe system itself. There needs to be a funding source for stormwater to help support that program. Sturgeon Creek area looked more flood-prone than the FEMA flood profile.

7/25/2018	Buske	613 Sylvan Ln	Sanitary	If a system is built correctly and is deep enough in the ground, won't the footing drain just using gravity to drain into the sewer system? Most cities don't put the sewer systems deep enough. Also has concerns about powering sump pumps in power failure. Do most Midland homes post-87 pump into backyard or connect to storm sewer?	IN PERSON	IN PERSON	IN PERSON	Costs associated with burying storm sewer deeper is astronomical. Sanitary sewer systems are 8-10 feet deep, which can happen because you have pump stations. Storm sewer can't be very deep because pumping stormwater is more expensive due to more volume. It's not practical to build a deep stormwater sewer system. Most new construction connects direct to storm sewer.
7/25/2018	Kime	7708 Winding Creek Ct	Both	You said that lining the sewers could increase sewer system life – how long? What capacity would temporary storage tanks have to have in order to deal with the issues like we had?	IN PERSON	IN PERSON	IN PERSON	Most of the time if it's a cured in place, fiberglass liner, it can last for another 50 years. Offline storage would be sized for a design event (like 25 years) to match the system so that any excess would be peeled off the system. Not an exact amount.
7/25/2018	Kuper	4125 Cruz Dr	Both	Interested in footing drain disconnection program. Did Ann Arbor and other communities pay for the removal & sump pump installation? How will Midland handle this?	IN PERSON	IN PERSON	IN PERSON	Yes, Ann Arbor had a FDD program with some pre-qualified contractors and assisted with payments; however, the program was mandatory. It took years to disconnect all offending properties, but made a significant impact on the system.
7/25/2018	McDonald	4709 Oakridge Dr	Both	Lives in the floodplain and is concerned about the I&I from homes who disconnect footing drains and pump into storm system. Will it impact those already in the floodplain? Also, stressed importance of purchasing flood insurance.	IN PERSON	IN PERSON	IN PERSON	The footing drain disconnection program in Ann Arbor measured the flow rate of sump pumps into system. Impact on system was so low it was almost immeasurable.
7/25/2018	Randolet	3118 Valorie Ln	Storm	Is it possible to increase the flow of water on Sturgeon Creek from under US 10, under Saginaw Rd, and under Sugnet. It looks like it gets plugged and is very narrow for such a large volume of water. Wants Sanford Dam to spill water early to allow excess capacity during storm events.	IN PERSON	IN PERSON	IN PERSON	There is a possibility that the culverts were either undersized or blocked. MSP helicopter videos showed that the water level of Sturgeon Creek on the north side (upstream) was higher. The FEMA flood map shows a flat line of flow in that area. Sanford Dam is a privately-owned dam that is federally regulated & out of City control.
7/25/2018	Saxton	3116 St. Mary's Dr	Both	Did the model take into account where there was sanitary sewer backup without runoff or standing water backup? It seemed like the pumping stations weren't keeping up. We had a 6-inch sewer back-up that was gone quickly, while standing water came much later.	IN PERSON	IN PERSON	IN PERSON	Timing of flows on Tittabawassee and Sturgeon Creek are delayed because the peak takes a while to get through the water shed. The sanitary sewer charges first due to rain in the local area before the water comes down through the watershed. Model does take that into account how fast system responds to I&I. Inflow is rapid; infiltration can sometimes take days.
7/25/2018	Shannon	3203 Whitewood Dr	Sanitary	How many of the 9,000 homes that have a footing drain connected to system are in the problem areas that are identified? Are the FDD included in the capital plan? Where does the capital come from for this program? Tell me about how Ann Arbor, Grand Rapids, Auburn Hills deal with these problems.	IN PERSON	IN PERSON	IN PERSON	Locations outlined in Table 7-1 of the report. FDD program is listed as Alternative A in the report. City has options, including to increase sewer bills to all users because it benefits everyone. Decisions on capital outlays will be detailed later on in Phase 2 investigations. Goal is to address I&I first, then see where additional capital improvements would be needed. All 3 communities were successful. Auburn Hills information was included in Volume 3 of the report.

7/25/2018	Starling	1204 Scott St	Unsure	Inquires about pumping station located on the Circle and how it impacts flooding in his area. Would like additional infrastructure installed in higher areas near him to avoid water collection in his area as he feels storm sewers aren't working.	Yes	7/29/2018	J Sova	Pumping station on Circle likely not impactful to his area's flood concerns. Retaining water upstream could cause additional flooding, but City can assess storm sewers in area in more detail.
7/26/2018	Anonymous	Not provided	Both	Does not want to pay more on sewer bill. Wants any problems fixed without increases to bills or taxes	No	N/A	N/A	N/A
7/26/2018	Cooley	1209 Michigan St	Both	Would like City to be proactive in updating WWTP using capital financing.	No	N/A	N/A	N/A
7/27/2018	Zimmerman	5203 Bloomfield Dr	Both	Believes causes of continued flooding to be a result of poor City leadership. Feels there's been too much growth too quickly.	Yes	7/30/2018	B Kaye	City will assess study and use expertise to address concerns and make improvements. Residents will need to determine how improvements are paid for.
7/31/2018	MacLean	609 Sylvan Ln	Both	As the system is today, are we ready for a 50 year flood, 100 year flood, etc. After we make these improvements, what storm will we be ready for?	IN PERSON	IN PERSON	IN PERSON	Depends on the neighborhood – some have a 2-year level, a 50% chance of the sewer system being overwhelmed, while some have 10 or even 25-year protection. Older neighborhoods tend to have smaller protection. If we fully implement plan, there will be a 10-year protection level – a 10% chance that the storm sewer would be overwhelmed.
7/31/2018	Anonymous	Not provided	Both	If we pull all of this extra water out of the sewer system, do we still need to expand the sewer system? The M-20 bridge was holding back water during the 1986 flood. If we took all the water out, do we still need the sewers enlarged?	IN PERSON	IN PERSON	IN PERSON	If the improvements are made, you will be able to meet the 25-year design event for sanitary sewer. In areas where a FDD program is implemented, you will not need additional improvements. One sewer along Perrine Road may need additional improvements as it appears significantly undersized.
7/31/2018	Buller	2901 Gibson St	Both	Wants more detention/holding ponds. Inquired about if study is being shared w/ major businesses & developers in Midland and how Dow Chemical, park land, golf course, etc. affect the floodplain. Wants more effective mgmt of floodplaining.	IN PERSON	IN PERSON	IN PERSON	The capital improvement plan does account for holding ponds. We recommend several areas where detention ponds are put in. Need available land because you'll need at least several acres for each installation This is a community study – all of the businesses have the ability to voice their opinions. However, most of the commercial developments in recent history have actually been built to the standards to counteract a flooding event.
7/31/2018	Anonymous	Sturgeon Creek Pkwy	Both	Agrees to improvements & paying whatever it costs to get a sewer system that works. I do want the City to consider development in the future. I have called about the trees along the Sturgeon Creek because I'm concerned they are going to cause a problem. I cut out my French drain (footing drain) and I don't have any problems. I agree with you that we need to fix the system and the City needs to learn its own lessons and act upon old recommendations.	IN PERSON	IN PERSON	IN PERSON	No response, as no questions.
7/31/2018	Wilcox	5202 Sturgeon Creek Pkwy	Sanitary	What does the FDD disconnection program mean for someone who has a footing drain connected to the sanitary sewer? Should I put in a backflow preventer?	IN PERSON	IN PERSON	IN PERSON	Footing drain disconnections can remove about 70% of the excess water from the sanitary sewer system. Several examples can be found in Volume 3 of the report's appendix. Costs can be anywhere from \$8,000-\$20,000. BFP are a choice that a homeowner can make. They do work, but they can get stuck and water can still enter your basement. They do require maintenance and monitoring from the homeowner.

7/31/2018	Tarrant	4213 Oakridge Dr	Sanitary	What percentage of flows in the sanitary sewer are coming from rainwater? Where is in coming from (streets, drains, infiltration, etc.)? Will working on the storm sewer system help the sanitary system as well? How will this be funded? Can we use road millage funds?	IN PERSON	IN PERSON	IN PERSON	It varies from location to location and is difficult to answer. Typically discharge 3-8 GPM from a FD into a sanitary system. During dry weather events, 30-35% of flows are non-sanitary. During storm events, 60-90% of flow is non-sanitary. No dedicated funding source for stormwater. There is a current Senate bill that would allow us to establish for a Stormwater Utility. For sanitary – it depends on how much money and what improvements are made. It could be put to a vote of the public via a bond, it could be a raise to sewer rates, or a combination of those. Very unlikely millage funds would be used.
7/31/2018	Anonymous	Not provided	Sanitary	Do you know of a system or a way to put a sump pump outside of a house?	IN PERSON	IN PERSON	IN PERSON	You could; however, we haven't seen one. You would have to be concerned about freezing in cold weather. You'd have to dig down the full depth of your basement for it to be effective.
7/31/2018	Young	2723 Wrenwood Ct	Storm	Did your study include control of the waters at Sanford Dam?	IN PERSON	IN PERSON	IN PERSON	Sanford Dam is a privately-owned dam with federal oversight. That would require sensitive negotiations. However, there might not be enough storage in that lake to impact the flows in the river like for the June 2017.
7/31/2018	McGuiness	2906 Gibson St	Both	Are there operational changes that could be made to detention ponds (like at the Mall) that could draw down the levels of these ponds to make them hold more? Were there any operational issues that the City has that caused flooding in the mall and other areas?	IN PERSON	IN PERSON	IN PERSON	A pumping system would be required, but those are privately-owned ponds built by the developers and these pumping systems are very expensive to implement. As far as observed operational protocols: none noted. Concerned about pipe under fairgrounds that may be blocked & caused that flooding.
7/31/2018	Rychwa	714 W. St. Andrews Rd	Sanitary	Doesn't believe FDD will make a significant impact on flows to sanitary sewer system. Would want more study and info before being required to put a hole in basement & install a sump pump	IN PERSON	IN PERSON	IN PERSON	FDs typically contribute 3-8 GPM. They are a clear problem. We looked at high-flood area and based the capital improvement plan on areas where a FDD program would make the most sense and most impact. That's what the public and the City would have to decide.
7/31/2018	Malecki	1705 Stark Rd	Storm	Provided pictures of a drain that he believes should be cleaned out near Inman and Sterns Drain. Believes it'd be much cheaper to go in with crews and clean out the ditches, to get rid of millions of gallons of water.	IN PERSON	IN PERSON	IN PERSON	The County Drain Commissioner is in charge of maintaining drains even in urban areas. You'd have to petition the County for a drain clean-out, then the Drain Commissioner would assess the drain, find out what it would cost, and would assess the residents for the cost to clean out that drain.
7/31/2018	Bader	5007 Nurmi Dr	Storm	Sturgeon Creek needs to be addressed and localized conditions caused significant flood damage. Culvert and cleaning of creek channel were suggested improvements. Continuation of earlier ECH comments.	IN PERSON	IN PERSON	IN PERSON	Same explanations as previous – additional study of Sturgeon Creek needed.
7/31/2018	Wenz	3305 Thornbrook Ct	Storm	Lives in Village West - wanted a tube put under the Rail Trail 10 years ago to prevent water from coming to condos. Wants a ditch dug or vacant land to be used for detention ponds. Concerned about a drain in the woods.	IN PERSON	IN PERSON	IN PERSON	In this location, some of the flooding is due to being in the Tittabawassee River floodplain, which are low spots relative to the river that improvements to the storm sewer won't address unless some hydrologic improvements are made. When the river floods to a certain level, it will flood.
7/31/2018	Manning	4905 Sturgeon Creek Pkwy	Storm	Will a review of culverts & bridges be done before the flows are increased to Sturgeon Creek? Can some of the acres of marshy area near Dow High School owned by the hospital be used to create a detention pond?	IN PERSON	IN PERSON	IN PERSON	Depending on the elevation and the quality of the ground, it may or may not be doable. Sometimes you want to leave the floodplain alone. If there are wetlands, building on it is very problematic and may be prohibited.
7/31/2018	Walsen	5206 Nurmi Dr	Storm	There is a drain that goes from Nurmi to Sturgeon Creek, and I've heard the City has gone through and cleaned it out. Was anything done to the sewer system in 2002 when a new water line was put in?	IN PERSON	IN PERSON	IN PERSON	We'll look at the drain that's on Nurmi Drive and will make sure it's functioning properly.

7/31/2018	Born	5012 Palm Ct	Both	There were a lot of rumors about failures of components and the Sylvan pump station during the flood event. Did the study find component failures anywhere in the system, or specifically in that area?	IN PERSON	IN PERSON	IN PERSON	We did not find any evidence in the study of that. There were a few pump stations that provided metered data that stated they were not pumping to the level that they are designed for. We recommended that those be evaluated and improved, and Sylvan was one of those that was recommend. Jefferson and Moorland are the other two.
7/31/2018	Carlson	3415 Marvo Ct	Storm	Can you give an idea of what the percentage of storm sewers in Midland that are undersized? Did we expand the system when development continued or did we use the same system with new development?	IN PERSON	IN PERSON	IN PERSON	Unsure of total percentage – but it's a significant fraction of the system. This is not unique to Midland, as most communities with older infrastructure have the same issue. The City's new development standards require the developer to create detention ponds and/or develop sewer systems that do not add to peak flow – or, in some cases, reduce the flow. Those rules have only been in place for about 20-25 years. The City's current standards protect the system from being overwhelmed by new development.
7/31/2018	Ulmanis	2514 Abbott Rd	Both	Does your firm have any recommendations about making parking lots more permeable? Does the footing drain disconnection would keep water where it is and not move it downstream? Do you consider the conveyance of larger amount of water and how it impacts the wildlife and the health of the river?	IN PERSON	IN PERSON	IN PERSON	Pervious pavement is an option, but it degrades & falls apart faster. Brick pavers are expensive. Most places divert water into green space. Pollutant loading was not a part of the study; however, reducing sanitary sewer overflows will protect the river and the storm sewer improvements will aid the sanitary sewer in preventing overflows to the river.
7/31/2018	Muste	4900 Oakridge Dr	Sanitary	When would I likely have to get my footing drain disconnected?	IN PERSON	IN PERSON	IN PERSON	Timeline is more for major construction programs that would update the system. First, the City is going to investigate and improve I&I in all the areas that are in Priority 1 & 2. It's recommended to wait the 2-3 years while the City does this before making a footing drain disconnect.
7/31/2018	Bain	2113 Bayliss St	Storm	My neighborhood had a very localized flooding event? Is there a process where we can find out the cause for a very localized event?	IN PERSON	IN PERSON	IN PERSON	Some areas are undersized for storm sewer. It may have been a very localized undersizing issue. Footing drains may not be as efficient as they used to be and the internal infrastructure of your own piping fails. City will be cleaning and televising the sewer systems to continue to identify these issues.
7/31/2018	Buske	613 Sylvan Ln	Sanitary	Supports installing larger sanitary sewer lines, increasing pump capacity, water proofing manholes and pump stations, and potentially installing offline storage. Opposes footing drain disconnection.	Yes	8/3/2018	J Sovia	Footing drain disconnection is appreciated as financially and personally disruptive, but is an immediate solution. Infrastructure improvements require spending in perpetuity to maintain.
7/31/2018	Hopper	513 Wanetah Dr	Storm	Wants to consider dredging the Tittabawassee River to increase capacity.	No	N/A	N/A	N/A
7/31/2018	O'Neil	3407 Marvo Ct	Both	Comments echo Bader. Requests a reconsideration of Sturgeon Creek to include it in the study.	Yes	7/31/2018	J Sovia	Past FEMA study for Sturgeon Creek is not accurate. It was also outside the scope of the study. City will consider public input and look into impacts created by the Sturgeon Creek as part of the future study.
8/1/2018	Manning	4905 Sturgeon Creek Pkwy	Both	Encouraged by interest in further study of Sturgeon Creek. Inquires about regular debris clean-up plans for SC.	Yes	8/3/2018	J Sovia	Past FEMA study for Sturgeon Creek is not accurate. It was also outside the scope of the study. City will consider public input and look into impacts created by the Sturgeon Creek as part of the future study.
8/1/2018	Waite	6030 Emerson Ct	Both	Wants hydrologic study of Sturgeon Creek. City should implement Stormwater Management system & fee. Only supports high-priority improvement independent of SC impact. Support FDD program.	Yes	8/3/2018	J Sovia	Sturgeon Creek roadway crossings should be evaluated. Creek/culvert maintenance exceeds current budget constraints. Priority 1 options impacting SC should be delayed pending further study.
8/2/2018	Bader	5007 Nurmi Dr	Both	Echoes previous concerns that were submitted on 7/16. Requests that a) Saginaw Rd culvert be widened @ Sturgeon Creek, or b) debris clean-up begin in the area.	Yes	8/3/2018	J Sovia	Thank you for your comments. All comments have been recorded & will be included in final study.
8/2/2018	G. Pederson	4408 Moorland Dr	Both	Asks for updates related to improvements north of US 10, upgrades to Moorland PS, increased capacity to sewer systems in her area.. Wants City more involved in development N of Midland in watershed. Wants info on backflow preventers.	Yes	8/3/2018	J Sovia	City ordinances since 1985 address excess storm runoff & development. Provided pros & cons of BFP. Will consider all alternatives (storage, FDD, pump station improvements, etc.)
8/2/2018	K. Pederson	4408 Moorland Dr	Both	Concerned about floodplain for State Drain. Wants to know how current plan will address new development in areas feeding to State Drain.	Yes	8/3/2018	J Sovia	City ordinances since 1985 address excess storm runoff & development. Provided pros & cons of BFP. Will consider all alternatives (storage, FDD, pump station improvements, etc.)



8/3/2018	Kaweck	4910 Sturgeon Creek Pkwy	Both	Wants to see Saginaw Rd culvert @ Sturgeon Creek widened & debris cleaned up in SC waterway.	Yes	8/5/2018	J Sova	City will consider public input and look into impacts created by the Sturgeon Creek as part of the future study. Creek maintenance costs exceed current budget constraints.
8/3/2018	Pollack	1420 Whitehall St	Both	Requests study assess elevation levels to prevent river water flowing into City sewers. Suggests using flapper gates. Wants upstream dams to be considered.	Yes	8/6/2018	K Guyer	Recommended improvements were limited to areas high enough to allow for positive drainage to river. FG effectiveness is limited & are known to malfunction and increase flooding. City does not control upstream dams.
8/3/2018	Wallin	1413 Crane Ct	Both	Concerned about bond improvements from 1996 not being "done". Does not believe detention ponds near Meijer to be adequate for flood prevention.	No	N/A	N/A	N/A
8/4/2018	Harding	3319 Rivercrest Ct	Unsure	Requests consideration of a river gauge for Chippewa River.	No	N/A	N/A	N/A
8/4/2018	Ulmanis	2514 Abbott Rd. Apt. T-9	Storm	Requests that consideration be made for the ecosystems on/in Tittabawassee River when improvements are made & any necessary measures taken to counteract any negative impacts.	Yes	8/7/2018	K Guyer	Scope of study did not examine ecological impacts. Reduction of sanitary sewer overflows will have positive environmental impact. Proposed detention ponds enhance water quality.
8/5/2018	Cislo	3108 Whitewood Dr	Both	Concerned about water/sewer work on Waldo Rd & development N of US 10 and its impact on sewer capacity.	No	N/A	N/A	N/A
8/5/2018	Green	4600 Moorland Dr	Both	No comment or question was given.	Yes	8/6/2018	K Guyer	Emailed Mr. Green to inquire about his question or comment. Nothing received.
8/5/2018	Krevinghaus	2716 Bobcat Ln	Sanitary	Concerned about power shut off impacting Perrine/Letts Rd lift station & how this impacted flooding. Inquired about portable generator not being used.	Yes	8/6/2018	K Guyer	Left VM message telling him Joe would follow up upon return to office on 8/8/18.
8/6/2018	Green	4600 Moorland Dr	Both	No comment or question was given.	Yes	see above	see above	Mr. Green never responded to an inquiry about his submission.
8/6/2018	Parkhurst	4304 Oakridge Dr	Both	Supports funding improvements via a tax increase or increase on sewer bill. Wants immediate impact.	Yes			
8/7/2018	Dukes	3801 Woodside Dr	Storm	Concerned about debris accumulation & dead trees in Sturgeon Creek area. Experienced flooding in '86, '96 & '17.	No	N/A	N/A	N/A
8/7/2018	Quarderer	4309 Moorland Dr	Both	Have never had flooding in their home until June 2017 event. Request that problem(s) be corrected.	No	N/A	N/A	N/A
8/7/2018	Tarrant	4213 Oakridge Dr	Storm	Concerned about sizing or potential of blockage at Saginaw Rd culvert of Sturgeon Creek. Requests immediate identification and remedy of issues for fear of impact on the overall study.	Yes	8/8/2018	J Sova	Discussed sanitary & storm sewer parameters and temporary retention ideas. Past FEMA study on Sturgeon Creek was not accurate. City will consider public input and look into impacts created by the Sturgeon Creek as part of the future study.

## E-City Hall Metrics and Survey



# 2017 Storm & Sanitary Sewer Study Feedback

August 13, 2018, 4:04 PM

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## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

## Introduction

This topic will collect feedback, comments, and questions from residents related to the 2017 Midland Storm & Sanitary Sewer Study conducted by consultants Hubbell, Roth & Clark (HRC) and OHM Advisors. The results of this survey will be provided to Midland City Council, as well as sewer study consultants and relevant City staff to assist in future decision-making and provide potential additional areas of exploration. If you choose to be contacted about your submission, a member of City staff will contact you via your preferred method of contact within 72 hours of your submission.

In-person public engagement sessions related to the sewer study will also be held on the following dates:

- Wednesday, July 25, 2018 - Midland High School, 1301 Eastlawn Drive, 6-7:30 p.m.
- Tuesday, July 31, 2018 - H.H. Dow High School, 3901 N. Saginaw Road, 6-7:30 p.m.

To access and review the study results before submitting a question, or for more information, visit [www.cityofmidlandmi.gov/sewerstudy](http://www.cityofmidlandmi.gov/sewerstudy).

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Summary Of Responses

As of August 13, 2018, 4:04 PM, this forum had:

Attendees: 82  
Responses: 37  
Hours of Public Comment: 1.9

Topic Start

July 6, 2018, 11:32 AM

Topic End

August 8, 2018, 9:14 AM

#### QUESTION 1

What area of the study is your comment/question most closely related to?

		%	Count
Storm sewer		22.9%	8
Sanitary sewer		14.3%	5
Both		60.0%	21
Unsure		11.4%	4

#### QUESTION 2

Feedback/Comment/Question:

Answered 30  
Skipped 7

all along also been creek culvert debris drain drains flood flooding flow footing from had high homes midland now nurmi river road saginaw sanitary sewer side so storm study sturgeon system t they those time up us was water years

#### QUESTION 3

Would you like to be contacted by a member of City staff or a consultant regarding your submission?

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

		%	Count
Yes		68.8%	22
No		31.3%	10

### QUESTION 4

#### Name:

Answered	29
Skipped	8

bader carol green john kathleen kenneth pederson roy

### QUESTION 5

#### Street address:

Answered	29
Skipped	8

4408 4600 5007 court creek ct dr drive mi midland moorland nurmi oakridge pkwy rd street sturgeon

### QUESTION 6

#### Phone:

Answered	28
Skipped	9

48640 989-631-8503

### QUESTION 7

#### Email:



## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

Answered	28
Skipped	9

48640 aol charter chartermi com gmail net pederson rgreen4600

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### QUESTION 8

#### Preferred method of communication:

		%	Count
Phone		17.2%	5
Email		82.8%	24

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## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

# Survey Questions

### QUESTION 1

**What area of the study is your comment/question most closely related to?**

- Storm sewer
- Sanitary sewer
- Both
- Unsure

### QUESTION 2

**Feedback/Comment/Question:**

### QUESTION 3

**Would you like to be contacted by a member of City staff or a consultant regarding your submission?**

- Yes
- No

### QUESTION 4

**Name:**

### QUESTION 5

**Street address:**

### QUESTION 6

**Phone:**

### QUESTION 7

**Email:**

### QUESTION 8

**Preferred method of communication:**

- Phone
- Email

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Individual Responses

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**Name not available**

July 6, 2018, 12:06 PM

**Question 1**

- Unsure

**Question 2**

No response

**Question 3**

- No

**Question 4**

No response

**Question 5**

No response

**Question 6**

No response

**Question 7**

No response

**Question 8**

No response

---

**Name not available**

July 6, 2018, 12:10 PM

**Question 1**

- Both

**Question 2**

No response

**Question 3**

No response

**Question 4**

No response

**Question 5**

No response

**Question 6**

No response

**Question 7**

No response

**Question 8**

No response

---

**Name not available**

July 6, 2018, 4:36 PM

**Question 1**

- Both

**Question 2**

No response

**Question 3**

- No

**Question 4**

No response

**Question 5**

No response

**Question 6**

No response

**Question 7**

No response

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 8

No response

### Name not available

July 9, 2018, 5:49 PM

### Question 1

No response

### Question 2

No response

### Question 3

No response

### Question 4

No response

### Question 5

No response

### Question 6

No response

### Question 7

No response

### Question 8

No response

### Name not shown

outside City Boundary

July 10, 2018, 4:21 PM

### Question 1

- Sanitary sewer
- Both

### Question 2

It's seems like a large majority of the sanitary sewer problems comes

from the added inflow from the footing drains. The Report calls out the high cost to having to fix these as a negative but recommends it as the best long-term option to prevent these problems from happening in the future. It seems that it would make the most sense to implement a footing drain disconnection program blended with some of the other improvements as needed.

I had an idea for funding, because sewer fees are based on the estimated flow to the system based on your water meter useage but those do not adequately count the footing drain input to the system, why not add a fee for footing drains connected to the system? If the fee was fairly reasonably large, it would give residents a monetary ROI to disconnect their footings. Sanitary sewer customers who can show that their house or business has had their footing drains disconnected from the system would be exempted from the fee. If the fee was something like \$50-200 per sewer bill you would create a cost incentive for people to go back and retrofit their system. The added fees from those people unwilling to disconnect from the system would cover the additional cost of system upgrades. The fees could also be used to create a program that would share the cost of the disconnection so maybe the city would pay half of the cost. Something like this overtime would fix a lot of the sanitary sewer inflow problems while also creating a revenue stream to cover the larger capital expense projects.

As for the storm sewer side of things it certainly seems like there is some need for capital spending and several of the proposed solutions make a lot of sense the offline storage in areas where that's available offers some nice long-term flexibility.

### Question 3

- Yes

### Question 4

Benjamin Larson

### Question 5

646 S Patterson Rd

### Question 6

9898594538

### Question 7

brlarson86@gmail.com

### Question 8

- Email

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Name not available

July 13, 2018, 7:23 AM

#### Question 1

- Sanitary sewer

#### Question 2

I still feel the blaming of the footing drains is not accurate. The vast majority of the really bad flooding was in areas where footing drains were disconnected. I also don't think the proposals adequately address the issue, they just put a small band-aid to appease people. If your so against the footing drains offer assistance to home owners to disconnect and move to the sewer. Most home owners won't do it on their own due to the cost prohibitive nature of it. Also in my neighborhood if everyone moved to the storm sewer they aren't big enough to handle all the additional water and we'd have more basements with water, and the streets would be flooded over the curbs worse than what they were during the flood.

#### Question 3

- No

#### Question 4

No response

#### Question 5

No response

#### Question 6

No response

#### Question 7

No response

#### Question 8

No response

### Name not available

July 13, 2018, 9:36 AM

#### Question 1

- Both

#### Question 2

We had flooding when the sewers backed up and were told our home had been grandfathered in the system. Will the city pay to fix the issue??

#### Question 3

- Yes

#### Question 4

Fred Tardiff

#### Question 5

4102 Elm Ct

#### Question 6

9898328977

#### Question 7

F.tardiff@hotmail.com

#### Question 8

- Phone

---

### Josh McFarland

inside City Boundary

July 13, 2018, 3:30 PM

#### Question 1

- Both

#### Question 2

All I would suggest (in addition to the work that needs to be done to fix the underlying issues), is that they create a warning system for homeowners that can alert us to the fact that we may experience water back ups. They now have a study which studied the event and what caused it and what specific indicators to watch for future issues going forward. They need to turn that into actionable information for citizens and alert us when some of those thresholds are met or getting close to being met so that we can prepare for the worst prior to waking up with 3 feet of water in our basements. If they can alert people even just a few hours before water starts backing up, that allows people to get to their basements and start removing items and valuables, get prepared with pumps, or leave the area in certain areas that may be prone to severe and life threatening flooding. I think the worst aspect of the flooding last year was not necessarily the

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

damage and destruction, but the fact that no one apparently saw it coming or warned anybody when the sewer capacity was at 100% and it was still raining outside. A little warning via Midland County 911 text or even a special alert would have been nice and probably would have saved a few hundred thousand dollars in damage, lost property, and rescue efforts. It was shocking to me how terribly unprepared everyone (from citizens to the city officials) were for that flood. In a place like Midland, which has flooded in the past on numerous occasions, being that woefully unprepared shouldn't happen.

### Question 3

- No

### Question 4

Josh McFarland

### Question 5

4713 Oakridge Drive

### Question 6

48640

### Question 7

48640

### Question 8

- Email

---

### Kathleen Bader

inside City Boundary

July 16, 2018, 6:08 PM

### Question 1

- Storm sewer

### Question 2

The residents of Nurmi are very concerned by the statement in your reports that "peak flows in the Sturgeon Creek were not part of the scope of study". Those who were here and personally saw the blockage of the culvert at Saginaw and Sturgeon very early in the flood know why we experienced "peak flow" water levels higher than the Tittabawassee flood stage warranted. The statement that " This flooding was not due to the city storm water infrastructure" is incorrect. If the culvert under Saginaw were wider, the debris the city has allowed to accumulate on their land

along the Sturgeon Creek upstream of Saginaw Road to Wackerly would have passed through.

Regardless of what the hydrologic model is designed to accommodate, whether it is the XP-SWMM or the EPA SWMM, years of accumulated debris in and along city owned property bordering the Sturgeon Creek can and did sufficiently block the culvert under Saginaw Rd such that the water on the Nurmi road side (upriver side) was far higher than the Midland High side (downriver) and backed up into the homes along Nurmi and beyond when it should have flowed through the Saginaw/Sturgeon culvert. (The back up extended to north of Hwy 10 by the airport – page 4 paragraph 4 your report). This back up from the culvert under Saginaw Road at Sturgeon is also a main reason why your "Sturgeon Creek flood profile does not appear to reflect observed conditions" Page 5 paragraph 1. The back up caused by the debris at the culvert was early and profound in scope. We did not even have time to get our sandbags in place because the culvert blockage made the water rise inordinately fast.

To reiterate the Tittabawassee river crested about 1.7 feet below the historic high water level of 1986. Had the water been able to pass freely through the culvert at Saginaw and Sturgeon, the water level on Nurmi would have been a couple of feet lower. It was not until the water climbed over Saginaw (bypassing the blocked culvert) that we finally saw a cessation of the rising water at our homes.

A lot of the damage during the June 23 2017 flood was caused by the inordinately quick and high rise of the Sturgeon River due to the blocked culvert/insufficient water flow under Saginaw Road at Sturgeon. This blockage was largely caused by the massive amounts of debris and dead ash trees that have accumulated (during the '86 flood as well as the annual floods) on the city park & property that borders Sturgeon Creek from Saginaw Road upstream to Wackerly. Our homes flooded earlier and to a far greater extent than they should have or would have given the stage of the Tittabawassee. Again, the water level on the north side (Nurmi side) of Saginaw Road was far higher far earlier than it was on the south (downstream side) due to the blockage. It was only after the water flooded over Saginaw Rd that we finally saw an abeyance of increasing water levels in our neighborhoods.

We now have even more debris in this area than we had before because much of it never made it under Saginaw road and out to the Tittabawassee – it backed up and filled the city 'park' that runs all along the river (as well as our yards). This creates not only an increased flood hazard in the future but a significant fire hazard to all of us to live along the river and the city 'park' that abuts it on the Nurmi side. Not only did this cause our homes to flood when, given the flood stage of the Tittabawassee, many of them would not have, it now causes a fire danger on the Nurmi side (upstream) of Saginaw Rd.

I had cleared all of my property of accumulated debris in 2016 as I do every couple of years, but it was a waste given what has floated on to it due to the blocked culvert and the years of accumulated debris on the city parkland. I have lived on Nurmi 30 years and have never seen the city clear up the debris on its land or creek beds (the Lalk drain) unless it was a fallen tree that blocked the river that I called in. (there are currently 6 of them viewable from my property that have NOT been taken care of despite numerous calls on my part)



## 2017 Storm & Sanitary Sewer Study Feedback

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If any of us ignored our land for 30 years, it would not be tolerated and it is time the city do a clean up & maintain its land. We do not expect a Valley drive "Park" (though that would be nice) or a Country Club Snake Creek (But the Lalk drain should be kept clear) but the city also has an obligation to keep its parks and waterways clear of debris and it has not done so for the 30 years I have lived here. It is time.

Given that your priority projects do NOT include increasing the size of the culvert at Saginaw and Sturgeon while it does call for simultaneously INCREASING peak flows to Sturgeon creek (page 23: "peak flows to the Sturgeon Creek would also be increased for those branches where improvements are recommended") the city is actually enabling worse flooding next time. This is not acceptable to the residents of Nurmi and we request further analysis on how to mitigate flooding in our area which appears to have been left out of this study. In addition, we would like to know when the city will:

1. Clean out and clear out the accumulated debris from the flood starting at the Saginaw road culvert and working their way upstream through the city park area and the stream bed clearing debris back to Wackerly at a minimum
2. Take down the standing dead ash trees on the neglected city 'park' along the river from Saginaw to Wackerly to forestall additional accumulation of debris that blocks the culvert and to reduce the fire hazard and remove all downed trees including those crossing the river
3. Double the width of the culvert underneath Saginaw Road at Sturgeon Ave so residents in this neighborhood don't bear the brunt of insufficient outflow in the future

We would appreciate an understanding of the plan going forward to reduce Nurmi flooding in future flood control rather than worsen it and what specific steps will be taken to rectify the debris problems outlined above.

Thank you

### Question 3

- Yes

### Question 4

kathleen bader

### Question 5

5007 Nurmi Dr.

### Question 6

48640

### Question 7

48640

### Question 8

- Email

## Pam Lemoine

inside City Boundary

July 20, 2018, 6:20 PM

### Question 1

- Storm sewer

### Question 2

We are in absolute agreement and support of the letter submitted to you by our neighbor, Kathleen Bader, citing concerns about Midland Storm and Sanitary Sewer Study. We also observed a fast back up of Sturgeon Creek on the Nurmi Drive side of the Saginaw/Sturgeon culvert. The flooding was TOTALLY due to the city storm water infrastructure because the culvert is not wide enough to manage the accumulated debris on the CITY'S land along Sturgeon Creek upstream of Saginaw Rd. The blocked culvert/insufficient water flow resulted in a fast back up of water into the homes along Nurmi Dr and beyond in June 2017. It is little wonder that the "additional surcharge" extended to north of Hwy 10 and exceeded "the 500-year flood profile of the Sturgeon Creek," and that "the Sturgeon Creek flood profile does not appear to reflect observed conditions."

As noted by Ms. Bader, "Given that your priority projects do NOT include increasing the size of the culvert at Saginaw and Sturgeon while it does call for simultaneously INCREASING peak flows to Sturgeon creek", we are opposed to the current plan laid out in your draft and request further analysis on how to reduce Nurmi flooding rather than worsen it.

### Question 3

- Yes

### Question 4

Pam and John Lemoine

### Question 5

5111 Nurmi Drive

### Question 6

989-708-5238 (Pam) 989-708-7389 (John)

### Question 7

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

pmlemoine@gmail.com

### Question 8

- Email

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### John Starling

inside City Boundary

July 25, 2018, 11:33 PM

### Question 1

- Unsure

### Question 2

We have lived on Scott for 40 years. During our time here we have experienced flooding in our street numerous times but mostly prior to 1997. In 1996 we had street flooding which came up to the house and entered the basement as the pressure of the water blew out an egress window. We ended up with 7 ft of water in the basement. After this event, there was a class action lawsuit against the city led by now Judge Beale. The City settled to all of the plaintiffs in this case. Soon after, a pumping station was installed on the Circle and we have not experienced high levels of water in our street during storms until this May. During the Memorial Day weekend storm water again gathered in the street to a level where cars could not drive through and rose over the sidewalks on our street to within 20 feet of the homes. A number of us were out in the street making sure the storm drains were clean but the water wouldn't go down the storm drains. We are in the lowest part of the subdivision so the water gathers in our section but aren't there specific types of storm drains, like the Sewer grate, Inhabitat – Green Design, Innovation, Architecture, Green Building that could be installed in the higher sections of our neighborhood that could slow and catch some of that water instead of sending it all to our area? I was told by an employee at the Waste Water Treatment plant that the pumping station on the Circle does not help the problem of the street flooding and it has been a coincidence that we haven't had flooding since its installation. Thank you.

### Question 3

- Yes

### Question 4

John R Starling

### Question 5

1204 Scott Street

### Question 6

989-708-1525

### Question 7

jackstarling@charter.net

### Question 8

- Email

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### Name not shown

inside City Boundary

July 26, 2018, 10:05 AM

### Question 1

- Both

### Question 2

I would like the City to be pro-active and include in the new Capital Financing, any and all updates to the Waste Water Treatment Plant. I am aware the WWTP held it's own during our last flood, but it may in the future not be able to stand alone, without much needed improvements/updates.

### Question 3

- No

### Question 4

JoAnn (Jody) Cooley

### Question 5

1209 Michigan Street

### Question 6

989-430-4345

### Question 7

jody.cooley@marriott.com

### Question 8

- Email

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Name not shown

inside City Boundary

July 26, 2018, 10:19 PM

#### Question 1

- Both

#### Question 2

I do not feel that I should have to pay more for my sewer bill. We are retired and my water bill and sewer bill are almost 150.00 now. There should be another way to fix the problem without raising the bill and taxes.

#### Question 3

- No

#### Question 4

No response

#### Question 5

No response

#### Question 6

No response

#### Question 7

No response

#### Question 8

No response

### Name not available

July 27, 2018, 7:00 AM

#### Question 1

- Unsure

#### Question 2

No response

#### Question 3

No response

#### Question 4

No response

#### Question 5

No response

#### Question 6

No response

#### Question 7

No response

#### Question 8

No response

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### Al Zimmerman Jr

inside City Boundary

July 27, 2018, 12:40 PM

#### Question 1

- Both

#### Question 2

In my lifetime in Midland, all 57 years, flooding has been a major issue that should have been resolved by now. I'm past the study stage, I believe this has been poor leadership on our city leaders part quite frankly.

#### Question 3

- Yes

#### Question 4

Alvin Zimmerman Jr

#### Question 5

5203 BLOOMFIELD DR

#### Question 6

989-430-5457

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 7

alzimmer@chartermi.net

### Question 8

- Email

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### Heidi O'Neil

inside City Boundary

July 31, 2018, 3:25 PM

### Question 1

- Both

### Question 2

My husband and I live on Marvo Court and have read the letter submitted by Kathleen Bader, our neighbor. We are in complete agreement with the points raised in Ms. Bader's letter to the City of Midland relative to the peak flows in the Sturgeon Creek being outside of the scope of the recent study. We believe to be an error in the study and request complete reconsideration to include the Sturgeon Creek in the study. It is an error in your methodology to not include this area in the study.

### Question 3

- Yes

### Question 4

Heidi O'Neil

### Question 5

3407 Marvo Court, Midland, MI

### Question 6

989-430-0067 (cell)

### Question 7

heidioneil21@yahoo.com

### Question 8

- Email

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### Gary Buske

inside City Boundary

July 31, 2018, 7:42 PM

### Question 1

- Sanitary sewer

### Question 2

One potential solution that was proposed to alleviate the problem of the sanitary sewer backing up into peoples' basements was to disconnect footing drains from the sanitary sewer. This solution involves digging a sump in the basement, connecting the footing drain to the sump, installing a sump pump, and running a line from the sump pump to the storm sewer. I strongly oppose this approach to the problem. While it does keep some storm water out of the sanitary sewer, it was not the cheapest option, it would be a major disruption to many peoples' homes, and it is still only a band aid on a system that was not correctly designed. Footing drains should flow to a storm sewer line that is deep enough under the street to allow gravity flow. I have friends and relatives in Minnesota and New York, and I know of no one who has a sump pump in their basement unless they live outside of a city.

Installing sump pumps to direct the water from footing drains to the storm sewer raises several concerns. Sump pumps can fail. How does one know when that happens? The sump will fill up, overflow, and start to flood the basement. Of course this is not the city's problem anymore, it is the home owner's problem. So now to prevent that, one needs a water alarm in the sump, and a back up pump to quickly install before the water overflows the sump. Of course if you are away on vacation, the water alarm and spare pump do no good without you there to fix the problem. Also, what happens when the power goes out? While that can happen anytime, it is most likely to happen during a severe storm when you need the sump pump the most. Yet another question is how can the city force some residents to disconnect their footing drains from the sanitary sewer but not other residents? Unless all footing drains are disconnected from the sanitary sewer, there would likely be lawsuits.

I support the options to fix the sanitary sewer problems that involve installing larger sanitary sewer lines, increasing pump capacity, water proofing manholes and pump stations, and potentially installing offline storage. Also, I support fixing the storm water system to keep more storm water out of the sanitary sewer system.

The consultant's report estimated that spending \$35M on the sanitary sewer would add about \$116 per year to the average home owners' sewer and water bill. Over the last 30 years, that would be \$3,480. I had expenses and losses well over \$10,000 because of the 2017 sewer back up. The additional \$116/year is something I would have willingly paid to prevent that. I believe that increase to the sewer and water bill is a reasonable way to pay for the needed improvements. However, while I am fortunate enough to be able to afford that added expense, there are those for whom this might be a burden. I suggest that to help low income

## 2017 Storm & Sanitary Sewer Study Feedback

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homeowners, the city offer a reduced rate to those might qualify. For example, homeowners with household incomes at some percentage of the government poverty guidelines (e.g. 100% - 150%) could be given a discounted rate.

Finally, as Mr. McFarland commented, can we have a system to warn residents when there is a potential for flooding and/or sewer backup? Perhaps people could sign up to get a message from the city on their cell phones warning of potential problems.

### Question 3

- Yes

### Question 4

Gary Buske

### Question 5

613 Sylvan Lane

### Question 6

9896318295

### Question 7

garyrbuske@gmail.com

### Question 8

- Email

### Name not shown

inside City Boundary

July 31, 2018, 9:50 PM

### Question 1

- Storm sewer

### Question 2

Has the option of dredging the Tittabawasee been considered? I don't know if it's ever been done but it seems if the bottom were dredged of the years of silt buildup it might have a significant impact on the flooding level here in Midland.

### Question 3

No response

### Question 4

Jeri Hopper

### Question 5

513 Wanetah

### Question 6

9898595243

### Question 7

jdhopper5265@gmail.com

### Question 8

- Email

### David Waite

inside City Boundary

August 1, 2018, 9:33 AM

### Question 1

- Both

### Question 2

I attended the July 31 session and have the following observations and comments..

1. The City must institute a "Storm Water Management" system and fee (to support both maintenance and capital improvement).
2. Sewer, creek and culvert maintenance must be improved immediately (use Emergency funds for immediate action to clear sewer blockages, creeks and culverts and then maintained through an ongoing "sewer management" fee).
3. A 5 year program to disconnect the 9,100 pre-1987 homes from the sanitary sewers should be planned and implemented. Priority areas have been already identified in the current study. Funding should be from the affected home owners and a city wide assessment. Owners who refuse to implement should be charged a much higher sanitary sewer fee (they are contributing to the flooding and potential overloading of the sewage treatment plant).
4. A study of the Sturgeon Creek hydraulics should be completed before decisions on expanding sanity and storm sewers in that area are taken unless it can be shown that this has no impact on those high priority projects.
5. Only those high priority capital improvements that are clearly

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

independent of the Sturgeon Creek "issue" e.g. Snake Creek, should progress.

### Question 3

- Yes

### Question 4

Dave Waite

### Question 5

6030 Emerson Court

### Question 6

9894448684

### Question 7

davewaite@charter.net

### Question 8

- Email

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### Nancy Manning

inside City Boundary

August 1, 2018, 1:24 PM

### Question 1

- Storm sewer

### Question 2

I attended the public information session for the Midland Sewer study on July 31st at Dow High School. Kathleen Bader, a neighbor, vocalized a concern for many in our neighborhood regarding the omission of the Sturgeon Creek and the culvert at Sturgeon Ave/Saginaw Road from the Midland Sewer study. I am encouraged by the response from the officials in attendance that they will now include the Sturgeon Creek and Sturgeon Ave/Saginaw Road culvert in the scope of their study before attempting to increase the peak flow to Sturgeon Creek.

Will the city of Midland start performing regular maintenance to clean up the debris that so often accumulates in Sturgeon Creek that impedes the flow through the culvert?

### Question 3

- Yes

### Question 4

Nancy Manning

### Question 5

4905 Sturgeon Creek Pkwy

### Question 6

989-859-5989

### Question 7

manningns@gmail.com

### Question 8

- Email

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### Gina Pederson

inside City Boundary

August 2, 2018, 10:35 AM

### Question 1

- Both

### Question 2

We live at 4408 Moorland Drive. Our backyard is the floodplain for State Drain. We attended the 07/31/18 Dow High presentation. Our house was built in 1979 and had no flooding prior to June of 2017. All our flooding in June 2017 was from the sanitary sewer system.

### Questions/Observations

• Since 1987, over 200 houses have been built "upstream" of us with no increase to the 12" sewer line that has been in place since our subdivision was built. Will a further upgrade to the Moorland Pump Station be sufficient to address all the demand that has been allowed? Is there room in the right of way by the State Drain to have a storage container for peak times?

• With the exception of the Bristlecone area subdivision north of the freeway, none of the new developments have put in detention ponds or other means to mitigate their added burden on the County/City storm water management systems. These areas went from wetland/woods to paved subdivisions. When will this be addressed?

• Moorland Drive was repaved 3 years ago and work was only done on the storm sewer system to repair problems but not to increase capacity of

## 2017 Storm & Sanitary Sewer Study Feedback

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either storm or sanitary sewers. What improvements are planned?

- While the 100-year flood of 1986 did not fill the flood plain behind our house, the June 2017 flood came within 14 inches of entering our basement window wells. As the lowest point in the floodplain, we had over 7 ft of water in the flood plain well before the Tittabawassee Crest. The State Drain between the houses on Moorland, Partridge and Oakridge has a large amount of construction debris and fallen trees blocking free flow and more has fallen since the flood.

- Will the constriction at the culvert on Perrine Road be addressed? Every water event sees the City trying to pump water from one side to the other.

- Huron Park is a 21.4 acre, land-locked, undeveloped and mostly unused piece of property that is convenient to State Drain and could be used for detention ponding. MISD has nearly 18 acres of unused land on either side of State Drain along Perrine Road that would also make a good place for water detention. Will these assets be considered in the storm water management plan?

- The cost of remediation of the inflows is not clear and there appears to be no plan for helping the affected homeowners identify and estimate the cost of remediation. Houses with smaller lots and unfinished basements may be in the \$3-5000 cost range, but the houses like ours with extensive front concrete drives, and fully finished basements will be significantly more. What benefit for the home owner is there, if not enough of his/her neighbors remediate?

- Please explain to home owners the pros and cons of backflow preventers—especially if they do not disconnect their footing drains and install sump pumps. Please partner with the service groups that will provide this work so that a consistent message is presented.

- City personnel and Officials appear unwilling to address the root cause of the storm flooding – development upstream of Midland in the watershed. What kind of political or legal pressure must be brought to bear to get negotiation underway to address water management? States such as Colorado seem to be able to address these issues at the State level, why not Michigan? We have previously been told by the Drain Commission that they do not work within the City of Midland. Please get a clear message and help your residents get the drains and creeks in the system cleaned and maintained.

- The only compelling speaker at the event on 07/31/18 was Kathleen Bader. The City and their consultants have to be clearer, simpler, and more focused on pocket-book concerns if they hope to gain public support. The presentation by the city seemed more designed to address liability issues and less to point to solutions. Do not wait 5 years to bring a millage before the electorate without clear communication and involvement of the entire community.

- Thank you for addressing this problem quickly and efficiently. Please continue to communicate with your residents and involve them in the solution. You cannot claim a city to be an attractive place for new residents if they have a high chance of having their homes flooded with sewage. Significant portions of the city are now not attractive for sale.

### Question 3

- Yes

### Question 4

Kenneth and Regina Pederson

### Question 5

4408 Moorland Drive

### Question 6

989-631-8503

### Question 7

gina.pederson@gmail.com

### Question 8

- Email

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## Name not available

August 2, 2018, 11:28 AM

### Question 1

- Storm sewer

### Question 2

Thank you again for holding the public meeting for input on the flooding. And thank you too for confirming that no upriver additions to the Sturgeon watershed flow would be made until the culvert blockage issue at Saginaw and Sturgeon is addressed.

I was surprised that many of my neighbors did not understand that the blocked culvert at Saginaw and Sturgeon was the reason that Nurmi, Gibson, Sturgeon Creek Pkwy., Marvo, etc flooded so very early in the incident and flooded far higher than the level of the Tittabawassee warranted. Some of us would not have flooded at all and none of us would have had as high and as serious a flood if the water flow to the culvert were free and clear instead of blocked by accumulated deadwood floating up from the city park bordering the Sturgeon Creek between Wackerly and Saginaw. This then back flowed into the Lalk drain at Gibson and Sturgeon (and dropped truckloads of wood debris on my 5 acres that border Nurmi/Sturgeon/Saginaw.)

The fact that the drain upriver at Wackerly was also blocked on the upriver side actually helped a bit because it kept some debris from further plugging the Sturgeon/Saginaw culvert.

When you think of it however, most people in the Sturgeon watershed were so consumed with trying to save their possessions and their homes and their pets that they didn't have time to go look and see what was causing the issue— They just assumed it was the level of the Tittabawassee. I had to smile when you showed the map where you



## 2017 Storm & Sanitary Sewer Study Feedback

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marked phone calls from people about flooding--those of us dealing with the inordinately high water caused by the blockage didn't have time for phone calls!

I'd like to reiterate a couple of points my neighbors and I made regarding the Sturgeon Creek floodplain.

1. Most of us are almost finished repairing our homes – its been 14 months since the flood and the debris that will block the culvert in the next flood has not been cleared...the city is aware of the issue but is moving too slowly and will cause us to flood again – an expense that we should not have to absorb given that the city's failure to clear its debris is the root cause of such flooding.

2. There are now more downed ash trees blocking the river (6 I can see from my land). In a flood, branches and treetops that have fallen accumulate behind the downed logs and create a mat of debris. When the river gets high enough, the mat moves downstream and collects the debris at the next downed tree, making a bigger mat.....etc. etc. by the time it gets to the culvert, major tree trunks have joined it and they come together to block the culvert.

3. Cleaning up only 30 feet on either side of the river will not solve this problem.

4. Our city parkland behind my house and along the Sturgeon from Saginaw upriver to Wackerly has been neglected since the LAST flood in 1986. It is time that it got its share of city park maintenance and cleanup. We are not asking for a beautiful lawn like the parkland near Orchard.... but we do want a complete clean up of debris – and a continued maintenance program.

5. The neglected parkland and dead and downed ash trees and accumulated flood debris is now a fire hazard for those of us in this neighborhood

6. There are trees along the Sturgeon that are falling but hung up in other trees. They will further block the river. They are a danger to life and limb to those of us whose yards they will fall on. Historically the city was responsive in removing these, but I have been calling for months.....and every day the people helping me clear the debris from the flood walk under these trees because they are right over the peninsula in my yard. The city has a huge liability until they take down the dangerous trees. They are a clear and present danger.

Either the culvert needs to be dramatically widened at Sturgeon and Saginaw or the city needs to clean up the parkland along the river from Saginaw to Wackerly....and not just 30 feet on either side of the river. The city cannot afford to wait to clean up the hung up trees and accumulated debris or they incur a huge liability. If you think it would be expensive to do that cleanup now, just wait until you kill someone and get sued or until there is a class action lawsuit because the city causes 50 or 60 homes to flood in the next big rain that would not have flooded had you cleaned up the debris.

Thank you.  
Kathleen Bader  
5007 Nurmi Dr  
kmbader@mac.com

612 616 0110

### Question 3

- Yes

### Question 4

kathleen bader

### Question 5

5007 Nurmi Dr

### Question 6

6126160110

### Question 7

kmbader@mac.com

### Question 8

- Email

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## Ken Pederson

inside City Boundary

August 2, 2018, 12:26 PM

### Question 1

- Both

### Question 2

• Our house on Moorland Drive has the floodplain for State Drain as the backyard. State Drain receives inflow from four other drains (Inman, Stern, Beck & Benson) within a one mile stretch just upstream of our neighborhood. There has been and continues to be extensive development upstream in all these drains areas. While the 100-year flood of 1986 did not fill the flood plain behind our house, the June 2017 flood came within 14 inches of entering our basement window wells. As the lowest point in the floodplain, we had over 7 ft of water in the flood plain well before the Tittabawassee Crest and over 3 feet of standing water once the "event" was over which we had to pump out ourselves because the City would not help. How will the plan prevent this from happening in the future?

### Question 3

- Yes



## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 4

Kenneth Pederson

### Question 5

4408 Moorland Drive

### Question 6

989-631-8503

### Question 7

pederson.kr@gmail.com

### Question 8

- Email

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### Carol Kaweck

inside City Boundary

August 2, 2018, 4:46 PM

### Question 1

- Both

### Question 2

I live at 4910 Sturgeon Creek Pkwy, on the creek side. I have been very concerned with the massive amounts of accumulated debris in and around the Sturgeon Creek from the flood, and the neglect along the city 'park' area and stream beds behind my home. I attended the public information session on July 31st at Dow High. I completely agree with Kathleen Bader that we need to double the width of the culvert underneath Saginaw Road at Sturgeon Ave so that we don't bear the brunt of insufficient outflow. We also need downed trees, including those crossing the river to be cleaned up, as this creates not only an increased flood hazard in the future, but a fire hazard to all of us who live along the river.

### Question 3

- Yes

### Question 4

Carol Kaweck

### Question 5

4910 Sturgeon Creek Pkwy

### Question 6

No response

### Question 7

Cjkaweck@gmail.com

### Question 8

- Email

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### Name not shown

inside City Boundary

August 3, 2018, 8:36 AM

### Question 1

- Both

### Question 2

We would like to have our storm and sanitary sewer lines cleaned out, repaired or replaced so as to avoid future flooding in homes behind Jefferson Middle School, homes behind ball fields.

### Question 3

- Yes

### Question 4

Rob and Michelle Ellis-Hutchings

### Question 5

5601 Summerset Dr

### Question 6

9899418505

### Question 7

Robmichelle45@gmail.com

### Question 8

- Email

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### Name not shown

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

inside City Boundary  
August 3, 2018, 11:13 AM

### Question 1

- Both

### Question 2

I am pretty frustrated that the improvements we voted on, a bond we're paying for, after the 1996 flood have not been fully implemented. We're now reaping the "benefits" of your delays and deferrals. Secondly the stormwater retention around Meijer is clearly inadequate. I don't ever remember Joe Mann and Eastman flooding so early and so badly. And that inadequate stormwater retention then has a serious adverse impact on residents downstream in that drain. You need to address that post haste.

### Question 3

- No

### Question 4

Anne Wallin

### Question 5

1413 Crane Court

### Question 6

9897505069

### Question 7

apwallin@gmail.com

### Question 8

- Email

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### James Pollack

inside City Boundary  
August 3, 2018, 4:37 PM

### Question 1

- Both

### Question 2

I have not seen any mention of how a high river stage will effect drainage from lower elevation areas. Building new and larger sewers will, in my opinion, not address keeping lower areas drained once the river reaches higher elevations such as above 30'. At this elevation, the river will flow backwards into the sewers and stop drainage and even add more water to those areas. We cannot afford to have river water flow into the city. Perhaps installing flapper gates on sewers with lower invert elevations would help keep river water out. Something must be done about about how much water is released for upstream dams. There should be some requirement that when the weather forecast shows high rainfall coming, the dams start to spill more water to build water storage capacity in the lakes. This step could take the peak off of high water flow to downstream cities. Also, raising the lake levels a foot or so during high runoff should not cause much damage compared to putting more flood water into the river,

To summarize, make sure the engineers look at what elevations the river begins to flow back into sewers and and see what can be done about that. Larger sewers at the same elevations will not solve anything except allow more river water to flow backwards. Also, see what can be done to manage lake levels more for flood control during these high runoff periods.

### Question 3

- Yes

### Question 4

James Pollack, PE

### Question 5

1420 Whitehall Street

### Question 6

9896312739

### Question 7

njpollack@chartermi.net

### Question 8

- Email

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### Name not shown

inside City Boundary  
August 4, 2018, 11:44 AM

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 1

- Unsure

### Question 2

We live on the Chippewa River about two miles west of the City of Midland. It would be very helpful to us if there could be river level gauge on the Chippewa River to inform us about the level of flooding, with predictions when the river will crest or has crested. We have checked with the Chippewa River gauge in Mt. Pleasant which doesn't really pertain to us. The Tittabawassee gauge readings also do not reflect the Chippewa's levels. We have a plan for evacuation and knowing the Chippewa River status would help us. Also note that the storm sewers on Rivercrest Ct and other streets along the Chippewa need attention; it is not just downtown! Thank you.

### Question 3

- No

### Question 4

Meg Harding

### Question 5

3319 Rivercrest Ct

### Question 6

989-835-5819

### Question 7

megharding@aol.com

### Question 8

- Email

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### Kristen Ulmanis

inside City Boundary

August 4, 2018, 7:07 PM

### Question 1

- Storm sewer

### Question 2

As the city moves forward with its Sanitary and Storm Sewer Study, I request that the final report include remarks regarding the potential

impact of all remedies on the Tittabawassee River ecosystem. During the Q & A time of the public meeting held on July 31st, Mr. Kacvinsky offered some insights into the ecological impact. He stated that repairing storm and sanitary sewer lines would help to prevent not only sewage overflows in basements but also the flow of raw sewage into the river.

Although most people at the hearing questioned the efficacy of footing drain disconnections, it is my understanding that this remedy reduces flow into the sewer system while also reducing the flow of stormwater directly into the river.

Mr. Kacvinsky commented that the city's current retention ponds, which maintain a pool of water throughout the year, appear to have functioned adequately during the 2017 event. He also suggested that detention ponds were an ecologically sound remedy. It is my understanding that detention ponds created in existing parks or green spaces could hold water temporarily during a severe storm, thereby slowing water flow and allowing sands and larger silt particles to settle before continuing to the river.

It is commonly thought that environmental concerns are necessarily at odds with the concerns of property owners and developers. I disagree. Omitting ecological impacts from a final report prevents the members of our community from making truly informed decisions. Ecological concerns are intrinsically linked with the quality of life in Midland, including property values and community appeal. (Who wants to celebrate Riverdays on a dead river?)

If the community ultimately deems it necessary to pursue remedies that may compromise the ecosystem (e.g. improved conveyance of storm water through larger pipes), then at the very least, the city should propose measures that would offset those impacts (e.g. expansion of Special Flood Hazard Areas or increased restrictions within SFHAs).

As we attempt to protect our neighbors' homes from future flooding, let's not ignore the critical role of a healthy river system and the science that helps us sustain it.

### Question 3

- Yes

### Question 4

Kristen Ulmanis

### Question 5

2514 Abbott Rd. Apt. T-9

### Question 6

(989)259-5719

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 7

kristenulmanis@gmail.com

### Question 8

- Email

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### Name not shown

inside City Boundary

August 5, 2018, 6:53 AM

### Question 1

- Sanitary sewer

### Question 2

Was the issue of why a portable generator wasn't installed on the Perrine/Letts road lift station when the power was shut off due to the flooding in the Alpine trailer park? When the lift station was without power, the entire area serviced by the lift station experienced back up of raw sewage in the majority of homes in the area. This concern was expressed to FEMA.

### Question 3

- Yes

### Question 4

John Krevinghaus

### Question 5

3716 Bobcat Ct.

### Question 6

9896006489

### Question 7

royal@ejourney.com

### Question 8

- Phone

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### Name not shown

inside City Boundary

August 5, 2018, 11:21 AM

### Question 1

- Both

### Question 2

No response

### Question 3

- Yes

### Question 4

Roy Green

### Question 5

4600 Moorland Drive

### Question 6

9896312531

### Question 7

rgreen4600@charter.net

### Question 8

- Email

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### kenneth cislo

inside City Boundary

August 5, 2018, 3:04 PM

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 1

- Storm sewer
- Sanitary sewer
- Both

### Question 2

The question deals with both sewers and the water main work taking place on Waldo road. It seems that we have a rush to increase water provided to new construction north of US10. What about the storm and waste sewers? Surely the existing sewers cannot handle the new capacity the repeated floods are fact enough? Why not upgrade sewers at same time and save on down time and added new construction.

### Question 3

No response

### Question 4

kenneth & linda cislo

### Question 5

3108 whitewood dr

### Question 6

9898353120

### Question 7

No response

### Question 8

- Phone

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### Connie Parkhurst

inside City Boundary

August 6, 2018, 9:51 AM

### Question 1

- Both

### Question 2

at 4304 Oakridge Dr the wooded area behind our house and also our backyard have been getting smore frequent standing water after big rains but was turned into a creek after the flood. We had water shooting up out of the drains in basement! The water flow encircled our house but ran

mainly down the west side. Neighborhood kids floated canoes behind us those few days. We had over 12" in basement. Our house was built without a sump pump and the neighbors have pumps which kept them only mildly wet instead of like our mess. It was not clean water. There is a plugged drain in corner of lots in backyard. Its known to city as we and others have asked about it prior to the incident last yr. All of us near me have been in our homes about 15 yrs . we have been here 19 and 1/2 yrs. Flooded a couple of times now. Had our lines cleaned of tress roots recently and after previous flood a few yrs before 2017.

I attended the open session. Thanks for the study and time. Cost support should be in some kind of tax or increase on our sewer bill and I would think 4\$ wasn't enough and we can't keep waiting! Decide very soon!

### Question 3

- Yes

### Question 4

Connie Parkhurst

### Question 5

4304 Oakridge Dr.,

### Question 6

9896313253

### Question 7

clparkhurst53@gmail.com

### Question 8

- Email

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### Name not available

August 6, 2018, 7:10 PM

### Question 1

- Both

### Question 2

No response

### Question 3

- Yes

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### Question 4

Roy Green

### Question 5

4600 Moorland Drive

### Question 6

9893888970

### Question 7

rgreen4600@charter.net

### Question 8

- Email

### Name not shown

inside City Boundary

August 7, 2018, 5:04 PM

### Question 1

- Both

### Question 2

We've lived in Midland for 51 years. During that time, the only time we've had water in our lower level was in June, 2017. We've lived in our present home for 39 years. It is on the edge of a flood plain, but we did not have water in our LL, even in 1986, when the Tittabassee crested at a higher level than in 2017. We lost nearly every possession in our LL, in June 2017, including family treasures which are irreplaceable. Please resolve the problem, so we don't have flooding again!

### Question 3

- No

### Question 4

George and Carol Quaderer

### Question 5

4309 Moorland Dr. Midland, MI. 48640

### Question 6

989-631-5006

### Question 7

georgeq2@aol.com

### Question 8

- Phone

### Julie Dukes

inside City Boundary

August 7, 2018, 7:21 PM

### Question 1

- Storm sewer

### Question 2

Our home had 19" of water in our basement for 4 days. Three dump trucks carted our basement belongings away after the flood. Now I hear that debris in Sturgeon Creek was a factor in the flooding in our neighborhood. The creek IS a mess; has been for many years. Now we have dead ash trees & whatnot all throughout, waiting to fall onto adjacent power lines & the street. This area needs to be cleaned up enough to not impinge on water discharge from the neighborhood. We just got our basement put back together! PS - this is the 3rd flood we've personally experienced in Midland: 1986, 1996 & 2017. Enough!

### Question 3

- No

### Question 4

No response

### Question 5

No response

### Question 6

No response

### Question 7

No response

### Question 8

No response

## 2017 Storm & Sanitary Sewer Study Feedback

Provide feedback, comments, or questions related to the 2017 Sanitary & Storm Sewer Study.

### John Tarrant

inside City Boundary

August 7, 2018, 11:18 PM

- Phone

#### Question 1

No response

#### Question 2

One of the main flooding areas were houses near the Sturgeon Creek North of Saginaw Road. Even though this area is not included in the study, there are two obvious issues with this area:

Sturgeon Creek flow was severely restricted under Saginaw Road. The Creek water level was 4 feet higher north of the road than the south side. The culvert is either considerably undersized or has a substantial blockage.

The Sturgeon Creek bed has numerous trees both standing and fallen that restrict flow and will plug the Saginaw Road and downstream culverts causing backups and future flooding.

Flooding of homes and also the sanitary sewer will occur again if these issues are not addressed. These issues will also skew any Sanitary Sewer Studies for the City and impact any Storm Sewer Studies in this area.

The sewer modeling is important to develop a comprehensive plan. The issues with the Sturgeon Creek flow restrictions will skew the study.

Known specific causes of flooding should be addressed immediately as they are already identified and will impact the validity of the study. There is also known actions that can be taken to resolve these issues. These should be resolved as quickly as possible.

and Joe Mann Blvd. .

#### Question 3

- Yes

#### Question 4

John Tarrant

#### Question 5

4213 Oakridge Drive

#### Question 6

989-486-9380

#### Question 7

jctarrant52@gmail.com

#### Question 8

## Public Outreach Meetings Q&A





## Sewer Study Public Comments

*Meetings held July 25 & July 31, 2018*

**July 25, 2018 – Midland High School, 6:00-7:30 p.m.**

**Steve Saxton**  
**3116 St Marys Drive**

Influx of runoff around buildings. Experienced sanitary sewer backup – 6 inches. 2 hours later, gone. Standing water in the street. In modeling, did you take into account where there was sewer backup without runoff or standing water backup? It seemed like the pumping stations weren't keeping up.

*Timing of flows on Tittabawassee and Sturgeon Creek delayed because peak takes a while to get through the water shed. The sanitary sewer charges first due to rain in the area, followed by the overland flooding. Model does take that into account how fast system responds to I&I. Inflow is rapid, infiltration can sometimes take days. May be attributable to footing drains as they respond quickly. Can be localized.*

**Karen Kime**  
**7708 Winding Creek Ct**

New liner could increase sewer system life – how long? What capacity would temporary storage tanks have to have in order to deal with the issues like we had?

*Most of the time if it's a cured in place, fiberglass liner, it can last for another 50 years. Offline storage would be sized for a design event like 25 years to match the system so that any excess would be peeled off the system. Not an exact amount.*

**Anonymous**  
**Businesses on Saginaw Rd. near Jimmy John's**

Storm sewers aren't adequate. It fills our parking lot because it comes in from one certain spot on the road. Some has gone into the building. It will take a lot of time and money for new storm sewers on Saginaw Rd. We have ripped up carpet, put 6 inch base, tiled the floor and waterproofed it. Stocking sandbags for flooding.

*Dealing with level of service problem. Design standards have changed, so areas that were developed 20-30 years ago, storm sewers aren't sized for 10 year event. Might be sized for much smaller event. Storm sewer systems are very large and very expensive to replace, but we recommend specific areas where storm sewer capacity needs to be increased.*

**Gary Buske**  
**613 Sylvan Lane**

5 houses from Sylvan pump station. Sewer back-up, happened in 86, 87, and flooded again in 2017. Footing drain comments: if system is built correctly, why doesn't the footing drain just using gravity to drain into the sewer system? My sump pump would drain into Snake Creek. Most cities don't put their sewer systems deep enough. Power goes out, how do you pump your sump pump? Wants the storm sewer line deep enough to put footing drain water into the sewer system.

*Some good concerns. Costs associated with burying additional sewer much deeper is astronomical. Sanitary sewer systems are 8-10 feet deeper, must be deeper. Can happen because you have pump station. With stormwater, they can't be very deep because pumping stormwater is more expensive, more volume, not practical to build a deep stormwater sewer system. Every city deals with this.*

Follow-up: Post-1987 construction requires footing drains . What's the common practice for where the footing drains pump?

*For the most part, it goes into the storm sewer system. Some areas, you cannot pump into a state-regulated channels. Most new construction is in subdivisions that will have a storm sewer system to discharge into.*

**Dave Shannon**  
**3203 Whitewood Drive**

Footing drains: How many of the 9,000 homes that have a footing drain connected to system are in the problem areas that are identified? Are the FDD included in the capital plan? Where does the capital come from for this program? Tell me about how Ann Arbor, Grand Rapids, Auburn Hills deal with these problems.

*Addressed in Table 7-1 of the report (locations) and FDD program is listed as Alternative A in the report. City has options for capital: increase sewer bills to all users because it benefits everyone. Decisions on capital outlays will be detailed later on in Phase 2 investigations. Address I&I first, then see where additional capital improvements would be needed. All 3 communities were successful. Auburn Hills information was included in Volume 3 of the report.*

**Pat Blasy**  
**5112 Stony Creek**

The drain system isn't going to help me because I live in the floodplain. Flooded 3 times in last 5 years. Does Stony Creek come up in the study? Will Stony Creek be cleaned up from debris any time soon?

*The capital improvement plan for stormwater does provide for abatements that extends to creeks and channels, as well as culverts and bridges, in addition to the pipe system itself. There needs to be a budget and funding source for stormwater to help support that program. Sturgeon Creek area looked more flood-prone than the FEMA flood profile.*

**Art Kuper**  
**4125 Cruz Drive**

Problem with footing drains. Ann Arbor program – Did A2 pay for the footing drain disconnection and the removal of the drain? Concerned about the large undertaking.

*Yes, Ann Arbor has a FDD program with some pre-qualified contractors; however, the program was mandatory. It took years to disconnect all offending properties, but made a significant impact on the system.*

**Marvin McDonald**  
**4709 Oakridge Dr.**

House built in 1980 – in the floodplain, but have never gotten flood water into the house. Closest was in 1986. Put in a backflow preventer and a sump pump in 2017. I'm concerned about the influx and infiltration of water – if you pump into backyards, is it going to impact people like myself in the floodplain?

*Evaluated flow rate coming off of sump pumps & impact on the drainage systems when we studied Ann Arbor. The impact of the footing drains over a large area hardly made a measurable difference to the storm sewer system. The footing drains and sump pumps are slow, while the rain from rooftops and roads invade the system immediately. The contribution was hardly measureable.*

Follow-up: Get flood and sewer back-up insurance through your insurance provider!

**Jacque Randolet**  
**3118 Valorie Lane**

Is it possible to increase the flow of water on Sturgeon Creek from under US 10, under Saginaw Rd, and under Sugnet. It looks like it gets plugged and then it dump into the bypass. Very narrow for such a large volume of water.

*There is a possibility that the culverts were either undersized or blocked. The State Police helicopter videos showed that the water level of Sturgeon Creek on the north side (upstream) was higher than the the south side of the highway. The FEMA flood map was not accurate, as it shows a flat line of flow in that area. At the Jack Barstow Airport, the flooding of Sturgeon Creek was showing a 500-year event. We need to continue studying this area.*

Follow-up: Can Sanford Dam release some water prior to rain events so that there is more capacity in the lake before it gets too high and has to spill more to send the water downstream to Midland?

*Sanford Lake and Sanford Dam are private and the lake levels and spilling of the dam are tightly controlled. Any steps and planning would need to be coordinated with that group and is out of the City's control.*

**July 31, 2018 – H.H. Dow High School, 6:00-7:30 p.m.**

**Don MacLean**  
**609 Sylvan Ln**

As the system is today, are we ready for a 50 year flood, 100 year flood, etc. After we make these improvements, what storm will we be ready for?

*Depends on the neighborhood in Midland – some storm sewers are fine, some are too small. Some neighborhoods have a 2-year level, so a 50% chance of the sewer system being overwhelmed, while some have 10 or even 25-year protection. Older neighborhoods tend to have smaller protection. If we fully implement plan, there will be a 10-year protection level – meaning there is a 10% chance that the storm sewer would be overwhelmed.*

**Anonymous**

If we pull all of this extra water out of the sewer system, do we still need to expand the sewer system? The M-20 bridge was holding back water during the 1986 flood. If we took all the water out, do we still need the sewers enlarged?

*If the improvements are made, you will be able to meet the 25-year design event for sanitary sewer. It depends on the improvement. In areas where a FDD program is implemented, you will not need additional improvements. One sewer along Perrine Road may need additional improvements as it appears significantly undersized.*

**Mike Buller**  
**2901 Gibson Street**

Concerns about holding ponds for stormwater runoff. I don't see that as a major issue that's being covered in this reports. Why can't we do more with holding ponds? I would hope that the City would require putting in holding ponds when they develop the land. We need to do a better job of managing our floodplain. How does Dow Chemical building affect the floodplain? How does the development of park land affect the floodplain? We have a golf course that may need to be smaller so we can let nature take its course.

*The capital improvement plans for storm sewer does account for some additional holding ponds, and those figures are included in the capital improvement plan and the financial numbers. We recommend several areas where detention ponds are put in. You need available land for that, so you'll either need to use park land or purchase land to use, because you'll need at least several acres for each installation. You could use park land and excavate it, then use it as a soccer field or another dual purpose. The City does have a requirement for new development to include a detention pond. We modeled the Mall area, for example, both with and without ponds and the ponds made a big difference. The flooding at the mall we believe can be attributed to a blockage on the fairgrounds near the Jacobs Drain.*

Is this presentation been made to the major businesses – Midland Mall, Dow Chemical Company, MidMichigan Health, etc.?

*Any improvements will also affect them financially. This is a community study – all of the businesses have the ability to voice their opinions. However, most of the commercial developments in recent history have*

*actually been built to the standards to counteract a flooding event. They are typically not impacted in the same way as residents and may not contribute as much.*

**Anonymous**

**Sturgeon Creek Parkway**

The City in 1986 should have had more of the retention ponds. On Sturgeon Creek Road, there was no consideration for detention ponds and there was so much more development. I also agree the whole system needs to be improved and I don't mind paying whatever it costs to get a sewer system that works. I do want the City to consider development in the future. I have called about the trees along the Sturgeon Creek because I'm concerned they are going to cause a problem. Some people on SC Parkway had sewer backup, some people had storm water. I cut out my French drain (footing drain) and I don't have any problems. Why are we not fixing the water lines on my road? I agree with you that we need to fix the system and the City needs to learn its own lessons and act upon old recommendations.

**Alison Wilcox**

**5202 Sturgeon Creek Parkway**

Several of my neighbors had creek water, but we had sewer water. Our footing drain is connected to the sanitary sewer. What does the FDD disconnection program mean for someone who has a footing drain connected to the sanitary sewer? Should I put in a backflow preventer?

*Footing drain disconnections can remove about 70% of the excess water from the sanitary sewer system. Several examples can be found in Volume 3 of the report's appendix. It's not cheap, but it's something the City is going to have to consider how it is carried out. Can be anywhere from \$8,000-\$20,000. BFP are a choice that a homeowner can make. They do work, but they don't always – they can get stuck and water can still enter your basement. It's a personal choice. They do require maintenance and monitoring from the homeowner.*

**Jon Tarrant**

**Oakridge Dr.**

What percentage of flows in the sanitary sewer are coming from rainwater? Where is it coming from (streets, drains, infiltration, etc.)? Will working on the storm sewer system help the sanitary system as well?

*It varies from location to location and is difficult to answer. Typically, you see discharge of about 3-8 gallons per minute from a footing drain into a sanitary system. The issue with a sump pump is that it does also require maintenance. It's very difficult to give exact percentages of flows from each source. Any improvements to the storm system is going to help the sanitary system because it helps eliminate surface flooding and ponding. During dry weather events, 30-35% of flows are non-sanitary. During storm events, 60-90% of flow is non-sanitary. (Inflow, infiltration, groundwater).*

How will this be funding? A millage, a fee, etc? I believe that most of the people here are willing to pay a few extra bucks a month to get the problem resolved.

*Depends on which system – there is not currently a dedicated funding source for stormwater. There is a current Senate bill that would allow us to establish for a Stormwater Utility – but we don't know if and when that will be approved. That would be one avenue, where residents are charged a fee like your*

*water and sewer bill. For sanitary – it depends on how much money and what improvements are made. It could be put to a vote of the public via a bond, it could be a raise to sewer rates, or a combination of those. It depends on City Council's approach to how quickly they want to get started and what they want us to do.*

Is there any way that the road millage renewal money could be used during road improvements to update the sewer system?

*Diverting more funding for the roads into drainage funding is very unlikely because it takes a scarce resource and makes it more scarce. That's why we have suggested a Stormwater Utility Fund because you can use the SUF, while using the street money for actual paving. To replace a sanitary sewer or water main, there are revenue sources for that. There's no revenue source for a storm sewer update. This is true of many communities in Michigan.*

Do you have to excavate to make a detention pond?

*Yes, you typically do. Contractors typically use the extra soil to build up the rest of the site. It could be anywhere from a few feet to 7-8 feet.*

**Anonymous**

Do you know of a system or a way to put a sump pump outside of a house?

*You could; however, we haven't seen one. You would have to be concerned about freezing in cold weather. You'd have to dig down the full depth of your basement for it to be effective.*

**Jim Young**

**Village West Condos**

Did your study include control of the waters at Sanford Dam?

*The Sanford Dam is not under the control of the City; it's a privately-owned dam with federal oversight. That would require sensitive negotiations. However, we're concerned that there might not be enough storage in that lake to move the needle very much to impact the flows in the river like for the June 2017.*

**Jim McGuiness**

**2906 Gibson Street**

Are there operational changes that could be made to detention ponds (like at the Mall) that could draw down the levels of these ponds to make them hold more? Were there any operational issues that the City has that caused flooding in the mall and other areas?

*You'd need a pumping system to make that happen, as most of the time these ponds are gravity controlled. Sometimes there's only a few feet of additional storage. Those are privately-owned ponds built by the developers that's out of the City's control, and these pumping systems are very expensive to implement. As far as observed operational protocols: it took awhile for that area to drain. We're concerned there was a large metal pipe that's pretty old under the county fairgrounds that we believe is partially blocked that caused that flooding.*

**John Rychwa**

**714 W. St. Andrews**

Based on my math, you're saying that the footing drains only put about 27,000 gallons into the sanitary storm. What is the peak flow problem? I bet it's going to be a fraction of the total flows. I don't understand why you would want to put water in motion into a neighbor's yard. You're assessing a \$72 million bill onto all the homeowners with footing drains (\$8,000 x 9100 footing drains). When you look at the cost and see that everyone would need to put a hole in their basement, I would want to see more information before doing that. It doesn't sit well with me.

*Typically, you can see 3-8 gallons per minute from footing drains. They are a clear problem in your community. Looking at the math, the footing drains contributed an estimated 60 million gallons per day, and the plant can handle 70 million gallons. We didn't say you needed a City-wide disconnection program. We looked at high-flood area and based the capital improvement plan on areas where a FDD program would make the most sense and most impact, rather than City-wide. That's what the public and the City would have to decide. We didn't design a system for a 200-year event. You can design to that, but it would be extremely expensive.*

**Charles Malecki**  
**1705 Stark Rd (Non-City resident)**

I have pictures of a drain that I think needs to be cleaned out near Inman and Sterns Drain. The City needs to go in and clean it like they used to in the 50s-70s. The surface water is not getting away through these uncleaned drains. There are too many downed trees. It'd be much cheaper to go in with crews and clean out the ditches, to get rid of millions of gallons of water.

*There is something in Michigan called the drain code. The County Drain Commissioner is in charge of maintaining drains even in urban areas. You'd have to petition the County for a drain clean-out, then the Drain Commissioner would assess the drain, find out what it would cost, and would assess the residents for the cost to clean out that drain. The City doesn't have any control over that. The drain code is certainly antiquated and funding that's available does not provide much for clean-outs. The County Drain Commissioner can make those improvements – the City is not paying for those improvements.*

**Kathleen Bader**  
**5007 Nurmi Drive**

Numerous comments, which have all been expressed via E-CityHall.

*Same explanations as previous – additional study of Sturgeon Creek needed.*

**Ron Wenz**  
**3305 Thornbrook Ct.**

This is not a new problem. We wanted to put tubes under the Rail Trail 10 years ago at Village Creek. Northwood didn't want that to happen, so it didn't happen. We keep asking for a ditch or something built that would route the water the other way instead of coming at our condos. All of the land is vacant and lots of ponds could be made. The City keeps ignoring this issue. Someone needs to check the drains in the woods?

*In this location, some of the flooding is due to being in the Tittabawassee River floodplain, which are low spots relative to the river that improvements to the storm sewer won't address unless some hydrologic improvements are made. When the river floods to a certain level, it will flood.*

**Nancy Manning**  
**4905 Sturgeon Creek Parkway**

You mentioned that the culverts are an issue for Sturgeon Creek. Will the review be done before the flows are increased to Sturgeon Creek?

*Yes. Knowing what's happening along the Sturgeon Creek, we do not recommend that any storm sewer improvement projects that discharge into the SC be down until the hydrologic issues are resolved. You should make improvements to bridges and culverts before any additional sewer improvements.*

We have acres of marshy area near Dow High School – some of it is owned by the hospital. Can we use some of that to create a detention pond?

*Depending on the elevation and the quality of the ground, it may or may not be doable. Sometimes you want to leave the floodplain alone. If there are wetlands, building on it is very problematic and may be prohibited.*

**Bill Walthers**  
**5206 Nurmi Dr**

Our street has one drain. There is a drain that goes from Nurmi to Sturgeon Creek, and I've heard the City has gone through and cleaned it out. But there's one drain for the whole street in the center of the street. Was anything done to the sewer system in 2002 when a new water line was put in?

*We'll look at the drain that's on Nurmi Drive and will make sure it's functioning properly.*

**Dave Born**  
**5012 Palm Ct.**

I'm in the Nakoma area. There were a lot of rumors about failures of components and the Sylvan pump station during the flood event. Did the study find component failures anywhere in the system, or specifically in that area?

*We did not find any evidence in the study of that. Were they functioning to peak efficiency? Unsure. There were a few pump stations that provided metered data that stated they were not pumping to the level that they are designed for. We recommended that those be evaluated and improved, and Sylvan was one of those that was recommend. Jefferson and Moorland are the other two.*

**Roseann Carlson**  
**Marvo Ct.**

Can you give an idea of what the percentage of storm sewers in Midland that are undersized? Did you know that a lot of the storm sewers in this area are undersized? Did we expand the system when development continued or did we use the same system with new development?



*We didn't run the total percentage – but it's a significant fraction of the system. This is not unique to Midland, as most communities with older infrastructure have the same issue. Not as much as some of the other older areas as you get more towards downtown. As you get newer development, the more likely you are to find sewers that are appropriately sized. The City's new development standards require the developer to create detention ponds and/or develop sewer systems that do not add to peak flow – or, in some cases, reduce the flow. Those rules have only been in place for about 20-25 years. The City's current standards protect the system from being overwhelmed by new development.*

**Kristin Ulmanis**  
**2514 Abbott Road**

Does your firm have any recommendations about making parking lots more permeable? Does the footing drain disconnection would keep water where it is and not move it downstream? Do you consider the conveyance of larger amount of water and how it impacts the wildlife and the health of the river?

*Pervious pavement allows rainwater to soak through the pavement to go through and infiltrate. That is used in some communities; they do degrade and fall apart faster. Brick pavers are feasible as an alternative, but they're far more expensive. It's more cost-efficient to put the water into greens space like rain garden or biometric holding areas. The MDEQ has created new rules and requirements for infiltrating storm water. You likely will not see a significant impact on the environment as you predict by putting the water into the river unless you use a lot of herbicide. Pollutant loading was not a part of the study; however, reducing sanitary sewer overflows will protect the river and the storm sewer improvements will aid the sanitary sewer in preventing overflows to the river. We do recommend detention ponds to help filter the storm water. Reducing surface flooding also reduces the likelihood that surface water will come into contact with lawn chemicals, pollutants, etc.*

**John Muste**  
**4900 Oakridge Dr**

I'm having trouble with the timeline. When would I likely have to get my footing drain disconnected?

*That is one possible alternative – not the only one and not one that's fully committed to at this time. In some areas, that is the lowest cost alternative. For the timeline: those are more for major construction programs that would update the system. First, the City is going to investigate and improve I&I in all the areas that are in Priority 1 & 2. It's recommended to wait the 2-3 years while the City does this before making a footing drain disconnect. It really relies on how quickly we as a City and City Council want to implement some of these improvements.*

**James Bain**  
**2113 Bayliss**

My neighborhood had a very localized flooding event, like possibly a half a block. Is there a way to find out what went wrong in my area? Is there a process where we can find out the cause for a very localized event?

*There were some areas that were undersized from a storm sewer capacity. It may have been a very localized undersizing issue. We would not expect the storm sewer system to be overwhelmed in that area for a rain event similar to the June 2017 event. What can happen in some areas – some homes that are older can become “outliers”. The footing drains in some of these homes may not be as efficient as they used to be and the internal infrastructure of your own piping failing. We will be cleaning and televising the sewer systems to continue to identify these issues.*